THE

JOURNAL OF GAS LIGHTING.

PUBLISHED MONTHLY.

No. 62, Vol. III.] LONDON, MARCH 10, 1854. [Price 1s. In America 30 Cents.

CONTENTS.

	PAGE
Circular to Gas Companies	357
The Ammonia Question	358
Communicated Articles:—	
The Chemistry of Gas Lighting	358
On Hydro-Carbon Gas from Boghead Coal, by Dr. Fyfe	359
Correspondence:—	
Shepard's Electric Gas	361
The Oil of Vitriol Bugbear	361
The Alleged Impurities of Gas	362
Mr. Still of the Chartered *v.* Mr. Still of the Great Central	364
The late Accident at Gillingham	364
Gas Fitters' Exhibition Fund, 1851	365
Register of New Patents:—	
Smith and Phillips's Improved Boiler	365
Smith and Phillips's Improvement in Gas Stoves	365
Marten's Improved Shade for Gasburners and Lamps	365
Poole's Improvements in Regulating the Flow and Pressure of Gas and other Fluids	365
Holliday's Improvements in Lamps and Lanterns	365
Brooman's Improvements in the Manufacture of Fuel	366
Mann's Improvements in the Purification of Gas, &c.	366
Parliamentary Intelligence:—	
Gas in the Post-office	366
Legal Intelligence:—	
Court of Queen's Bench—Regina *v.* the Overseers of Warblington	366
Miscellaneous News:—	
City of London Court of Sewers	367
The Marylebone Vestry and the Imperial Gas Company	368
European Gas Company	369
Report of the Salford Gas Committee	369
Sydenham Gas and Coke Company	370
Special Meeting of the Sheffield Gas Consumers' Company	373
Sheffield Consumers' Gas Company	376
Light in Rome	376
Injury from Gas Explosion	376
Price Current	376

TO CORRESPONDENTS.

C. H. C.—*We shall be glad to receive authentic information relative to the so-called "Lias gas." It is, doubtless, derived from a bituminous shale.*

NOTICES.

Subscribers, who have not remitted their Subscriptions for the past year, are requested to do so without delay, so as to avoid any interruption in the receipt of the Journal.

The subscription is 10s. per annum if paid in advance, or 12s. on credit, payable in two sums of 6s. each, due in June and December of each year. All subscriptions commence from the 10th of January.

All Communications and orders for Advertisements to be addressed to the Editor, 32, Bucklersbury, London.

The Editor will be particularly obliged by his friends forwarding to him Notices of all Meetings, Trials, or Appeals, which it may be interesting to the Gas World to have reported.

Circular to Gas Companies.

Considerable misapprehension exists as to the facts connected with the supply of gas to the General Post-office, arising from some statements made originally before the Court of Sewers of the City of London, and subsequently alluded to by Lord Torrington in the House of Lords, on the 9th ult., a report of which will be found in our present issue. Lord Torrington and Viscount Canning (Postmaster-General) appear to be ignorant of the fact that cannel coal gas has been recently introduced into the General Post-office, and that to this cause *alone* is due the decrease in the quantity consumed. The mysterious purifying-box—containing, we believe, several trays of sulphate of copper, acetate of lead, and lime—can have had no influence in diminishing the quantity of gas consumed, but rather the reverse, as it is a well-established fact that the first of these substances precipitates a small portion of the rich hydro-carbon vapours contained in all coal gas—diminishing, consequently, its illuminating power, and requiring the consumption of a larger quantity of gas to obtain a given amount of light. From the statement made by Mr. Leslie, before the Court of Sewers of the City of London, it appears that the effect of the introduction of cannel gas has been to diminish the weekly consumption from 245,000 to 120,300 cubic feet. The corresponding weekly cost of an equal amount of light was, previously to its introduction—

245,000 feet, at 4s.	£49	0	0
And the present cost is—			
120,300 feet, at 6s.	36	1	10
Saving by cannel gas	£12	18	2

A large portion of our present issue is devoted to an examination of the influence on the sanitary condition of the atmosphere, of the small portion of sulphur present in all coal gas, principally as bisulphuret of carbon (an impurity upon which Mr. Leslie's materials are destitute of any action whatever); and with the view of counteracting the prejudicial effects of Dr. Letheby's mischievous and unfounded assertions on this head, we propose to reprint, in a cheap form for distribution, the remarks of Mr. Lewis Thompson thereon, published in our last and present issue, as well as Mr. Spencer's admirable but rejected communication to the *Times*.

M. Regnault, the distinguished member of the *Académie des Sciences*, has addressed to us a letter, inserted in another column, protesting against the use which has been made of his name, in furtherance of the designs of the speculators who have taken up Mr. Shepard's schemes for the production of "electric gas." Its perusal will show what foundation existed for the paragraph inserted in the *Mining Journal* of Jan. 14 last, in which it is stated that "the invention has been inspected by M. Regnault, of the Institute, and many of the most distinguished scientific men of France, who have given highly favourable testimonials," which they promise to publish at a future period. Our contemporary no doubt acted in good faith in the announcement it made, and will, we presume, see the propriety of inserting M. Regnault's protest.

The London coal trade is now undergoing one of those violent reactions to which all commodities are liable after having risen to an unnatural height. The price of gas coal of fair quality may now be quoted at 17s. per ton, with a heavy market. The arrivals have been enormously large, and many cargoes have been sold on terms which will scarcely cover the freight and charges. The total imports into London are stated in Mr. Scott's returns to have been:—

	Month of Feb., 1854.	Increase in 1854.
By sea	468,894 tons	75,048 tons.
By railway	80,586 ,,	50,545 ,,
By canal	3,320 ,,	1,945 ,,
	452,800 tons	127,539 tons.

The gas coals are as follows:—

Northumberland and Durham.

	Tons. February, 1854.	Tons. Total, 1854.
Bell's Primrose	3,147	4,081
Brown's Gas		
Burnhope	3,423	4,988
Dean's Primrose	6,366	8,837
Eden Main	11,065	16,714
Eighton Moor	1,694	2,227
Felling Main	5,099	5,540
Holywell Main	3,068	3,942
Leverson's	4,999	6,605
Leverson's and South Peareth	887	887
Medomsley	1,088	1,406

New Pelton	14,570	.....	22,013
New Tanfield	5,069	.....	6,154
Peareth (unscreened)	5,005	.....	8,016
Pelaw Main	6,851	.....	8,507
Pelton Main	7,479	.....	10,220
Pontop Windsor	349	.....	349
Ravensworth Pelaw	6,233	.....	8,544
Redheugh Main	400	.....	487
South Peareth	884	.....	1,620
South Pelaw	1,114	.....	1,239
Tanfield Moor	3,214	.....	4,047
Townley	1,716	.....	1,716
Usworth (by rail)	3,206	.....	5,629
Walker Primrose	1,716	.....	3,351
Waldridge	355	.....	989
Washington Hutton seam	5,493	.....	6,959
Whitwell Hutton seam	4,698	.....	6,148
West Pelaw	2,626	.....	4,502
West Pelton	707	.....	1,906
West Wylam			
	113,521		159,522

NEWCASTLE CANNEL.

Cowen's	380	.....	380
Ramsay's	5,205	.....	6,094
Tyne	1,229	.....	1,229
	6,814		7,703

SCOTCH CANNEL.

Auchinheath			
Barton's Hill			
Boghead	2,762	.....	3,706
Capeldrae	307	.....	307
Cowdenbeath			
Grangemouth			
Kelvinside	562	.....	562
Knightswood	617	.....	617
Lesmahagow			
Lethans	70	.....	70
Little Wraith	150	.....	150
Lochgelly	472	.....	472
Methil	200	.....	200
	5,140		6,088

THE AMMONIA QUESTION.

OUR Irish soda-water friend has this month uncorked one of the choicest bottles of his exhilarating fluid in honour of Mr. Lewis Thompson; and, though it has gone off with a capital pop, either its gas is too vapid or its water too fetid to permit it to be swallowed by any one endued with an ordinary allowance of the senses of smell and taste, notwithstanding the extraneous aid of the bill-sticking notoriety with which the filthy beverage is attempted to be foisted on the public. The occasion for this piece of extravagance is Mr. Thompson's assertion, in the columns of our last JOURNAL, that 21 grains of oil of vitriol could not be obtained from (not 100 cubic feet, as had been asserted, but from) 100,000 cubic feet of any coal gas, as supplied to the public within twenty miles of St. Paul's Cathedral. The bottle must have been well charged at high pressure with the deadly-lively fluid, for we are assured "There is no object in all the study of humanity more striking, more contemptible, and, at the same time, more awfully instructive, than a conceited coxcomb—a superficial pretender, who, with a mere smattering of knowledge, ventures to assume the aspect of wisdom, and to put forth his opinions with all the confidence of an oracle. Such men are common enough among the dabblers in science; and they fully realise the truthfulness of the saying, that 'a little knowledge is a dangerous thing': it is, in fact, dangerous to him who possesses it, and dangerous to those who are unfortunately deluded by it." We need scarcely say we quite coincide with these sentiments, and before we conclude we have little doubt our readers will further agree with us, that they are more especially applicable to the vulgar writer of them.

Mr. Thompson, we are told, "has evidently never made any experiments, or has not conducted them in a proper manner, on the subject at issue; for, if he had done so, he would have discovered that the ammonia contained in coal gas is decomposed during combustion, and that it cannot pass through the ignited particles of flame without being resolved into its elements, and its hydrogen burnt;" and "Again, every chemist, from the time of Priestley, knows, or ought to know, that, as ammonia is easily decomposed when it is made to traverse a red-hot tube, it can scarcely be expected to resist the still more powerful action of a white-hot flame."

Whether the writer of the above extracts has really made any experiments we will not say, but it is pretty clear that he cannot have done so in a proper manner, for he has only to evaporate to dryness one of his own soda-water bottles, full of the liquid which has been condensed from coal gas burnt in the ordinary way, and add to the dry saline mass a little caustic lime, when a copious evolution of ammonia will at once take place, proving beyond all dispute that the ammonia contained in the gas *has traversed the white-hot flame without being decomposed*, and hence disproving the theory upon which the writer takes Mr. Thompson to task.

Dr. Letheby himself is forced to acknowledge, in his report of the 11th ult., that "a *large portion* of the sulphuric acid is neutralised by the ammonia of the gas," forming thereby sulphate of ammonia, as first asserted by Mr. Thompson. Indeed, it is now clear that oil of vitriol resulting from the combustion of coal gas has as little to do with contaminating the atmosphere of this metropolis as the apple pips had in poisoning the unfortunate victim of the miscreant Tawell.

Communicated Articles.

THE CHEMISTRY OF GAS LIGHTING.

(*Continued from p.* 240.)

Having traced the manufacture of coal gas through its various stages, from the retort to the gasholder, it now becomes necessary to offer a few remarks upon the proper employment of this useful article, so as to procure from it the greatest number of advantages with the least amount of inconvenience; for, like all other earthly benefits, gas has its drawbacks, just as there are "spots in the sun."

Before entering, however, upon the use of coal gas as an illuminative agent, it may not be amiss to say something respecting what is called light, or the cause of that sensation known as vision. From habit we are apt to assume that light has distinct and definite qualities, which qualities we refer to the light derived from the sun as a standard. But, however convenient it may be in argument to fix an arbitrary standard of this kind, still, in viewing the subject philosophically, we must bear in mind that it is an arbitrary standard of our own creating, and must vary with the varying conditions incidental to the terrestrial and solar movements. The great peculiarity of the sun's light, as observable in this country, is, that it possesses "quantity" and "intensity," in what appears to be nearly equal proportions; whereas, towards the poles of the earth, the "intensity" becomes great in summer, but is small during the remainder of the year, the "quantity" being pretty uniform during the whole period of the sun's exposure. Near the equator, however, the "intensity," though very great, appears to be less than the "quantity"—a circumstance, no doubt, connected with the trifling effects of reflection and refraction over that portion of the earth's surface; whilst nearer the poles, and especially in the winter portions of the year, the reflection and refraction of light are there so great as to sensibly diminish the "quantity," though the "intensity" remains, of course, the same, or nearly so. By "quantity" of light, we mean that the luminiferous particles are then numerous; by "intensity," that the temperature to which they are heated is very high. Thus, if we heat an inch of platinum wire red hot, it will give off a certain quantity and intensity of light; and if we heat two inches red hot, we shall only double the quantity, the intensity remaining as before; whereas, if we heat these two inches to a white heat, the intensity will be much increased, though the quantity continues unaffected. As an example of "intensity," the electric light and the oxy-hydrogen lime-light are good illustrations; for the number of particles actually in operation at any one moment is very small, whilst the temperature to which they are exposed is the greatest we can produce, and, therefore, a painfully glaring light results, with very dark shadows. In opposition to this, we have the common oil lamp, or lamp of the ancients, with its thick wick and conical flame, affording a great "quantity" of light, but of a very low "intensity." These conditions arise from the comparatively small heat of the flame, as contrasted with the number of carbonaceous particles rendered solid during combustion; for, although we can form no idea of the origin of the light from the sun, yet terrestrial or artificial light seems always to result from the action of heat upon solid matter—a fact long ago illustrated and explained by Sir H. Davy. Thus, phosphorus, which, when burnt in oxygen, gives rise to a solid compound (phosphoric acid), affords a brilliant light during its combustion; nevertheless, it gives off no light when consumed in chlorine, with which it forms a gaseous combination at a high heat. Similarly, hydrogen burns in oxygen without light, until some solid infusible matter, as carbon, for instance, is added to the flame. Now, if we keep this distinction betwixt "intensity" and "quantity" steadily in view, we shall have no difficulty either in understanding the peculiar

quality of different kinds of luminous flame, or in making arrangements for so modifying any one of these as to cause it to produce effects similar to those of any other. On comparing together the quality of the light afforded by a common candle and ordinary coal gas burnt in a fishtail burner, we see in a moment that the candle gives a "brown," and the gas a "blue," light, as if the former flame contained more solid matter than could be satisfactorily heated by the hydrogen of the combustible employed; whilst, in the case of the gas, the hydrogen appears to be in excess and the solid matter deficient. And this is certainly the fact; for, if a thin platinum wire be held in the flame of the candle, the "quantity" of light will not be increased, but rather diminished, whereas with the gas a directly contrary effect takes place. Or, if we consume the same kind of gas in different kinds of burners, as when common gas is burnt, on one hand in an argand burner, and on the other in a fishtail burner, we shall find that the "quantity" of light is greatest with the argand, and the "intensity" with the fishtail; or, in other words, that the first is comparatively brown, and the latter blue, which is caused by the much larger extent of contact with atmospheric oxygen that takes place in the fishtail burner over the argand in the lower portion of the flame; but if the quantity of gas consumed by the fishtail is increased to some definite proportion, where this atmospheric contact is diminished by the carbonic acid generated in the lower part of the flame, then it will give off a quantity and intensity of light equal to that of the argand. From which we may adduce this general axiom, that every burner has a certain fixed amount of each quality of gas, which it will consume with the greatest photometrical advantage; and that a larger or smaller quantity of the same gas will not give proportionally the same amount of light as the fixed quantity in question. And we may also adduce, that with poor gases, as common gas, the less oxygen supplied to the lower part of the flame beyond that which will consume the hydrogen, the better; whilst, with very rich gases (as Boghead cannel), an admixture of oxygen is useful, by consuming the surplus carbon, and thereby adding to the heat of the flame at its lower part, thus converting quantity of light into intensity, as in the argand oil lamp. A gently flowing current from the burner is, for the same reason, of great consequence with poor gas, but with very rich gas a smart jet, or even hissing flame, may be advantageous; therefore the holes or openings for the issue of the gas in the burners intended to consume common coal gas must always be much larger than in those meant for cannel gas, as by this arrangement a much thicker stream is obtained, and proportionately less atmospheric contact at the lower part of the flame—just as thin twigs have more bark than thick ones, in reference to their solid content. Any burner which causes atmospheric oxygen to mingle with the lower portion of the flame, is an intensity burner; whereas one which prevents such admixture is a quantity burner: that is to say, the former increases the "intensity" of the light, and diminishes the tendency to smoke; the latter, on the contrary, increases the "quantity" of the light, and adds to the tendency to smoke. Cannel gas requires the first, and common gas the last, kind of burner.

Reverting back to a previous part of our remarks, in which it is stated that the solar light in this country possesses almost an equal amount of intensity and quantity, this, it is obvious, should be the proportion aimed at by those who contemplate the improvement of artificial light. But we are here met by something like an insurmountable obstacle, which arises from the difficulty, or perhaps impossibility, of generating from combustion carried on in common air a heat high enough to give the intensity of light required. Atmospheric air, as is well known, consists of about four parts of nitrogen to one of oxygen; therefore, when any combustible is burnt in it, the whole of this nitrogen has to be raised to the temperature of the burning body, by which an immense amount of heat is carried away from the point of action, and spread, as it were, over an extensive surface. There is, consequently, no concentration of heat upon the solid matters present, and thus, these being feebly heated, afford a light of but little intensity. With pure oxygen gas a much better result ensues, as in the Bude light; but here again we are met by the cost of pure oxygen, and the necessity for increasing the number of carbonaceous particles, or, in other words, of naphthalising the coal gas. Even, however, if these could be overcome, it seems likely that the heat obtained by burning coal gas and oxygen is much inferior to the temperature requisite for giving an intensity of light equal to that of the sun's rays. At all events, the formation of photographic impressions or pictures is not nearly so rapid by the aid of the Bude light as by the diffused light of day; and this photographic or chemical effect is somehow intimately associated with the question of "intensity."

It has been supposed that under no circumstances does artificial light contain the same number and kind of rays as that of the sun: the violet or chemical rays being deficient, and the red or yellow in excess. But this is most likely due to the want of a temperature high enough to communicate that vivid undulation which produces chemical effects; at all events, it is quite certain that there is nothing definite in this respect with regard to artificial light, for the chemical effects produced by the flame of a common candle are enormously increased by the aid of pure oxygen gas, just as the intensity of its light is increased. And the same fact holds good with common gas, and every other luminiferous combustible. We have every reason, therefore, to suppose that, if sufficient heat could be given to the carbonaceous atoms of a common candle, the intensity and chemical power of the light then yielded might become equal to that of the sun, provided these particles or atoms of carbon did not fuse or become gaseous in such a temperature, for in that case they would of course cease to reflect light altogether. The great value of lime, as an adjunct to the oxy-hydrogen blowpipe, consists in its excessive infusibility. But there is a yet more powerful argument in favour of the supposition that artificial and solar light are identical. If we examine the process of vegetation as it is now going on before our eyes, we shall find that the light of the sun is indispensably necessary towards the deposition of carbon in plants; in short, without such light, plants cease to acquire weight, and ultimately die.

(*To be continued.*)

ON HYDRO-CARBON GAS FROM BOGHEAD COAL.

By Andrew Fyfe, Esq., M.D., F.R.S.E.,

Professor of Chemistry, University and King's College, Aberdeen.

In the Journal of Gas Lighting for July, 1852, I gave the results of numerous trials, made with the view of ascertaining the quality and expense of gas from Boghead coal and water—or hydro-carbon gas, as it is now generally called—compared with those of gas from the coal alone. I there stated that 16,093 cubic feet might be obtained from a ton of coal; that the illuminating power of the gas was that of 11·79 sperm candles per foot, thus making the light given by the proper combustion of the gas from a ton of coal amount to that afforded by the combustion of 3253·5 lb. of sperm.

The quantity of gas procured from the same coal by the addition of water was there stated to vary, being from 24,932 to 75,253 feet per ton, according to the quantity of water used. The illuminating power of these gases also varied, but in none did the total amount of light equal that obtained by the combustion of the gas procured from the coal alone. This is shown by the following table:—

1 Ton Coal.	Feet of Gas per Ton of Coal.	Illuminat. Power 1 foot = Sprm Cand. 120 grs.	Gas of 1 Ton = lb. of Sperm.	Durability Jet, 5-inch Flame.	Comp. Value of Gas in lb. of Sperm.
				m. s.	
Boghead alone..	16,093	11·79	3253·5	81 3	100·0
Boghead & water	24,932	6·51	2782·4	48 20	85·5
Do. do.	39,553	4·73	3213·5	43 20	98·7
Do. do.	52,942	1·99	1773·6	34 40	54·5
Do. do.	75,253	0·27	348·3	29 10	10·7

From the results of these trials I came to the conclusion that "in no instance is there any gain in the amount of light from Boghead coal gas by the agency of water, in the method recommended by the advocates of the hydro-carbon gas; and that in the cases in which the quantity of gas is increased to a great extent, there is a decided loss by the agency of water."

The truth of this conclusion has not been called in question even by those who had previously reported favourably on the hydro-carbon process, and on the results of whose experiments I took the liberty to animadvert. I may, therefore, consider the question as to the efficacy of water in increasing the amount of light obtained by manufacturing gas in that way as settled; still, however, some may say that my trials were made on a small scale, and that, therefore, the results cannot be depended on. I allow, to a certain extent, the force of this remark; and this has made me anxious to repeat the trials on a larger scale, which I am glad to say I have had an opportunity of doing, through the kindness of Mr. Lyon, the manager of the gas works at Leith, by whom I was assisted in all the experiments. The apparatus used was erected at Leith under the superintendence of the patentees of the hydro-carbon process. It consisted of two retorts: one for containing the charcoal or coke by which the water was decomposed; the other for carbonising the coal, of which it contained 2 cwt. The quantity of gas was measured by a large meter in the usual way; and in each trial, with the exception of 5·5 feet which were received in a small gasometer, the whole was conveyed into one large gasholder, from which, after being kept there for some time, it was taken for trial. The charges were continued for about four hours, and the quantity of gas discharged was noted every quarter of an hour. The first trial was as follows:—

Time.	Feet of Gas.	Time.	Feet of Gas.	Time.	Feet of Gas.
h. m.		h. m.		h. m.	
10 10	—	11 25	257	12 40	149 Total
10 25	309	0 40	232	0 55	139 Feet
0 40	355	0 55	206	1 10	134 2795
0 55	290	12 10	180	0 25	73 per
11 10	283	0 25	164	0 40	24 2 Cwt.

At 1h. 40m. the retort was drawn, and another charge was put in, which gave gas as follows:—

Time.	Feet of Gas.	Time.	Feet of Gas.	Time.	Feet of Gas.	Time.	Feet of Gas.	Time.	Feet of Gas.
h. m.		h. m.		h. m.		h. m.		h.	
2	—	3 0	247	4 0	199	5 0	111	6	21
2 15	297	3 15	266	0 15	173	0 15	64	Total 2745	
0 30	286	0 30	265	0 30	153	0 30	22	per 2 Cwt.	
0 45	254	0 45	240	0 45	125	0 45	22		

The average of these trials is 27,700 feet per ton of coal. All the gas of these two trials, with the exception of the small quantity above alluded to, was received in the large gasholder, and allowed to remain there for twenty-four hours, after which it was subjected to the several trials, and with the following results—the illuminating power being tried by burning the gas sometimes by a Wingfield argand, sometimes by a large batswing burner:—

Specific Gravity.	Condensation by Chlorine.	Durability Jet $\frac{1}{33}$, 5-inch Flame.	Illuminating Power 1 foot = Candles 120 Grains.	1 foot = Grains Sperm.	Gas of 1 Ton = lb. Sperm.
		m. s.			
·652	13·	49 36	5·96	715·2	2830·15

In the trials with Boghead coal alone, as given above, the gas amounted to 16,093 feet per ton, and the light afforded by its combustion was equal to that of 3253·2 lb. of sperm; that by the hydro-carbon gas now given was equal to that of 2830·15 lb.; and

3253·2 : 2830·15 :: 100 : 87 very nearly.

Consequently there was by this trial a loss of 13 per cent. of the total amount of light that can be got from the gas of Boghead coal when carbonised alone.

The result of this trial very nearly agrees with that recorded in my previous paper, in which I obtained about 25,000 feet of gas from a ton of Boghead by the water process. In it the illuminating power of the gas was equal to that of 6·51 candles of 120 grains: thus making the light given by the combustion of the whole gas equal that of 2782·4 lb. of sperm. In the trial at Leith the quantity was 2830·15 lb., or very nearly two per cent. more.

Since my paper appeared in the JOURNAL OF GAS LIGHTING, I have been told that though there is by my trials no gain in the total amount of light by the combustion of the gas manufactured by the water process, yet, as a much larger quantity of gas is obtained, there must be a gain to the manufacturer, who values coals by the durability of the gas obtained from them, or who *values the gas solely by its durability*. I do not admit the accuracy of this method of ascertaining the value of a gas coal, or of the gas that it yields. No doubt, *commercially*, it may be advantageous to the *gasmaker* to resort to it; but is it so, or is it a fair way for the *consumer?* I maintain that it is not. Admitting, however, that durability is of consequence, let us see how the value of the water gas will bear a comparison with that of the gas from Boghead coal alone, when ascertained by that method.

I have given the durability of the former as 49 m. 36 s., and of the latter as 81 m. 3 s.; the gas per ton being—for the former 27,700, and for the latter 16,093. Then,

81 m. 3 s. : 49 m. 36 s. :: 100 : 61

and 16,093 : 27,700 :: 61 : 105 very nearly.

Accordingly, the durability of the gas by the water process is as 105, to that of the other as 100; or an advantage by 5 per cent. on the time that the gas from a ton of coal will burn under the same circumstances as that from the coal alone. But it must be borne in mind that, though both will continue to burn for nearly the same time, the water gas is affording only about half the amount of light that the other does; and that, consequently, in order to obtain the same light, nearly twice the quantity of the hydro-carbon gas must be consumed in the same time; and, accordingly, that though the time required for the consumpt of the water gas is a little greater than that required for the Boghead gas, its value is greatly reduced in consequence of a greater quantity being required to give the same light; in other words, as, to get the same light, a greater quantity of water gas must be used, the time that the total quantity will continue to burn when giving the same light as the other is greatly reduced, and, therefore, in this way of estimating the value of the process, there is not only no gain, but, on the contrary, an actual loss, by the use of water, independently of the extra expenditure occasioned in decomposing it.

I have already stated that, in collecting the gas in these trials, it was all received into a large gasholder, with the exception of 5·6 feet in the first, and 5·5 feet in the second, charge. The object in view, in separating this small quantity, was to ascertain whether any reliance could be placed in experiments made on a small quantity of gas, taken at stated periods from a large quantity, coming off from coal during the process of decomposition.

In the two trials above recorded, 2-10ths of a foot were thrown into a small gasometer at regular intervals during the continuance of the charge—the periods in all amounting to 50; but at the last only 1-10th of a foot was put in, thus making the whole amount to 11·1 feet. On this gas, after being allowed to stand for twenty-four hours, the same trials were made as with the gas from the large gasholder. The following are the results:—

Specific Gravity.	Durability Flame, 5 inches.	Illuminating Power 1 foot = Candles.	1 foot = grs. Sperm.	Gas of 1 Ton = lb. of Sperm.	Comparative Value of the two Gases.
	m. s.				
Gas from small Gasholder } 648	46 30	3·96	475·2	1880·4	100
Gas from large Gasholder } 652	49 36	5·96	715·2	2830·15	150

These results show that the gas thus collected was not an average sample of that which the coal yielded. I am not prepared to say what occasioned the difference; but certainly it is very remarkable. It at first appeared to me that, perhaps, the pipes leading to the gasometer were large in proportion to the quantity of gas to be passed through them, and consequently that, when filled with gas, the portion put in at different periods, which at each was only 2-10ths of a foot, was not part of the gas coming off from the coal at the time, but part of that with which the pipes were at first filled, and which, if of inferior quality at first, would continue to give to the gasometer a gas of inferior quality throughout. I found however, on inquiry, that this was not the cause.

The pipe delivering the gas into the small gasometer, and which proceeded from the meter through which the whole of the gas was passed, was only 18 feet in length, and had an internal area of only 132 cubic inches. Now, this is considerably less than 2-10ths of a cubic foot; and it must, therefore, not only have been completely emptied, but must also have allowed more than its own contents to have passed through it at each of the periods stated. Whatever was the cause of the difference in the quantity of the gas thus collected, and of that received in the large gasholder, the result proves that we can place no reliance in experiments performed in this way, and that the only satisfactory method of ascertaining the quality of a gas given off from a coal is to throw the whole of it in one large gasometer, and to perform the trials on the gas thus collected after it has been kept for a sufficient length of time to allow the whole to be of uniform quality.

The preceding observations apply to the value of Boghead coal gas, and of Boghead coal and water gas. Supposing the gas from the same quantity of coal in both cases to be consumed in this way, it is evident that not only there is no increase, but an actual loss of light; and again, that, by equal consumpts of the gases, the light afforded by the water gas is within a mere trifle of only one-half of that afforded by the coal gas.

With regard to the expense in manufacturing the two gases, the question still remains to be answered, can the gas manufacturer obtain hydro-carbon Boghead coal gas at half, or nearly half, the expense at which he can make the same quantity of Boghead coal gas, and thus afford to give it to the consumer at about half the price of the other? Because I have all along taken up the question not only in a scientific point of view, but also *commercially;* and the interests of the consumer ought to be studied in questions of the kind. In my former paper, from calculations founded on data given by others, I came to the conclusion that he cannot do so. I am now enabled to answer the question from the ascertained expenditure in the trials at Leith.

Taking the two trials, on an average yielding 2770 cubic feet of gas per 2 cwt. of Boghead, and taking the cost of the coal at 20s. per ton, the expenditure of three charges of 2 cwt. each amounted to—

	s.	d.
6 cwt. of Boghead	6	0
12 bushels of cinders for furnace	2	0
1¼ cwt. of coal for furnace	0	7½
Coke for water retort	0	6
2⅛ bushels of lime	1	3
	10	4½

Now, 2770 × 3 = 8310 feet cost 10s. 4½d., or 124·5 pence,

and 8310 : 124·5 :: 1000 : 14·9; or very nearly 15d. per 1000 feet of gas.

Boghead coal gas, I find, can be manufactured at Aberdeen as follows:—Supposing the coal to yield only 14,000 feet per ton, and taking the cost, as before, at 20s., or

14,000 : 240 :: 1000 : 17·1, say 17d. per 1000 feet for coal alone.

In carbonising, the expense has been found to be—

	s.	d.
Boghead coal	1	5
Coal for furnace	0	4¼
Lime	0	0¾
	1	10

Thus, 1000 feet of Boghead coal gas cost 22d., and the same quantity of Boghead coal and water gas cost 15d.; but the light, foot for foot, is as 11·79 to 5·96; and

22 : 15 :: 100 : 68

5·96 : 11·79 :: 68 : 134

Accordingly, for procuring the same amount of light by carbonising Boghead coal by the water process, there is an expenditure of about 34 per cent. beyond that at which the light can be got by carbonising the Boghead coal alone.

In this calculation the price of the Boghead coal has been taken at Leith and at Aberdeen as the same—20s. per ton. At the former place the fuel for the furnace was taken at 10s. per ton; at Aberdeen it is usually about 14s. Had the furnace fuel at Aberdeen been taken at the same price as that at Leith, then the charge, instead of being 4½d., should have been stated lower. This would reduce the expense of manufacture of Boghead coal gas below 22d. per 1000 feet, and accordingly would comparatively increase the extra expenditure of the manufacture of the water gas. I maintain, therefore, that unless a better method is devised for manufacturing hydro-carbon gas from coal than that now in practice, it ought to be at once abandoned.

Correspondence.

SHEPARD'S ELECTRIC GAS.

Monsieur le Rédacteur,—Je vois par quelques numéros du JOURNAL OF GAS LIGHTING qui me sont parvenus par la poste, que la société constituée pour exploiter les brevets Shepard s'appuie sur une opinion très favorable que j'aurais enoncée ouvertement sur la portée industrielle de ses procédés. Je proteste contre cette assertion, en faveur de la quelle il serait impossible de fournir une seule preuve, et je vais indiquer, en quelques mots, mon intervention dans cette affaire.

Après la visite que S.M. l'Empereur fit au petit établissement de Mr. Shepard je reçus l'ordre d'aller examiner les appareils, et d'adresser *directement* à sa Majesté mon opinion sur l'avenir reservé à cette nouvelle industrie. Je me rendis chez Mr. Shepard aux Champs Elysées; je vis marcher sa machine; je pris quelques mesures. Mon opinion se trouvant dès lors fixée sur la valeur industrielle du procédé, je n'insistai pas pour connaitre la composition du liquide soumis à la réaction electro-chimique, et dont Mr. Shepard désirait garder le secret. J'écoutai sans controverse, les developpements que Mr. Shepard voulut bien me donner sur l'avenir de ses inventions, et me bornai à lui demander quelques renseignements sur la fabrication de ses electro-aimants, et sur leur prix de revient. Enfin, je me retirai, après avoir écrit, sur la demande de Mr. Shepard, mon nom sur une liste, à la suite de beaucoup d'autres personnes qui avaient honoré Mr. Shepard de leur visite.

Mon rapport fut envoyé le lendemain à sa Majesté l'Empereur. Je n'ai montré ce rapport à personne; et, d'après les opinions que l'on veut bien me preter, j'ai lieu de croire qu'il n'a pas été lû par les personnes qui s'intéressent à cette affaire.

Je vous autorise, Monsieur, à donner à cette lettre le genre de publicité que vous jugerez convenable.

Recevez, Monsieur, l'assurance de ma consideration distinguée,

V. REGNAULT,
Membre de l'Académie des Sciences.

Sèvres, le 11 *Février*, 1854.

(TRANSLATION.)

Mr. Editor,—I see by several numbers of the JOURNAL OF GAS LIGHTING, which have reached me through the post, that the company formed for working Shepard's patents rely upon a very favourable opinion that I may have openly pronounced upon the industrial bearing of his process. I protest against this assertion, in favour of which it would be impossible to produce a single proof; and I am about to explain in a few words my intervention in this affair.

After the visit made by H.M. the Emperor to the little establishment of Mr. Shepard, I received an order to go and examine the apparatus, and to address my opinion upon the prospects of this new industry *directly* to his Majesty. I visited Mr. Shepard's house in the Champs Elysées; I saw his machine in action; I took some measures. My opinion being from that moment formed upon the industrial value of the process, I did not insist upon knowing the composition of the liquid submitted to electro-chemical reaction, and of which Mr. Shepard was desirous of retaining the secret. I heard without contradiction the statements which Mr. Shepard was desirous of giving me upon the prospects of his invention, and I restricted myself to asking him for some information relative to the manufacture of his electro-magnets, and as to their cost. I then retired, after having, at Mr. Shepard's request, written my name upon a list, following many others who had honoured him with their visit.

My report was sent next day to H.M. the Emperor. I have not shown it to any one, and, judging from the opinions imputed to me, I have reason to believe that it has not been seen by the parties who interest themselves in this affair.

I authorise you, Sir, to give to this letter the sort of publicity which you may judge most suitable.

Receive, Sir, the assurance of my distinguished consideration,

V. REGNAULT,
Member of the *Académie des Sciences*.

Sèvres, Feb. 11, 1854.

SIR,—The following diagram illustrates the nature of the decomposition which ensues when oxalic acid and water are acted on by voltaic electricity, as proposed by Mr. Shepard in his patent of Jan. 4, 1853:—

Materials used.	Composition.		Products obtained.
63 parts or 1 atom of oxalic acid	Carbon....	12	44 of carbonic acid.
	Oxygen ...	24	
	Water.....	27	
9 parts or 1 atom of water.....	Oxygen ...	8	
	Hydrogen..	1	1 of hydrogen gas.

So that, for the production of 1 part, by weight, of hydrogen gas, no less than 63 parts, by weight, of oxalic acid are required; consequently, to make 1 cubic metre or 100 grammes of hydrogen, there will be needed 6300 grammes of oxalic acid, or 6·3 kilos, which, in London, sells for about 2 francs the kilo; hence we have 12f. 60c. But, as the atomic weight of carbonic acid is 22, we have 44 times the weight of the hydrogen, or double the bulk of that gas, to get rid of by purification. Now, at present we find that ordinary coal gas contains about $\frac{1}{10}$ of its bulk of impurity, and to remove this a cost is incurred of about ¼ a franc for every 30 cubic metres of gas, so that this is the cost of removing 1 metre of impurity; hence it follows that to remove 2 metres, an outlay of 1 franc will be needed. This, added to the 12f. 60c. already incurred, makes 13f. 60c.; and surely 1f. 40c. is not too much to assume for labour, fuel, wear and tear, &c.? But as I had assumed, for the sake of argument, that Mr. Shepard could make this gas for nothing, and that, even then, the cost of naphthalisation was ruinously hopeless, I feel at some loss to comprehend why Mr. Barse should, as he has done in a French periodical, attempt to combat a position which I had purposely vacated, and which he must now perceive admits of a very easy and effective defence.

As regards his remarks upon Mr. Shepard's 5 or 6 flasks, I really cannot see what this has to do with the matter, unless Mr. Barse wishes to say that Mr. Shepard can make 1 cubic metre of gas from the contents of these bottles. If so, all I have to observe in reply is, that I never witnessed the production of so much as 5 cubic litres.

For the rest, I have, as usual, honestly expressed my sentiments upon Mr. Shepard's process. That it will produce luminiferous and non-explosive gas, I have testified; but that as a commercial speculation it will ever prove economical or remunerative, I regard as something worse than doubtful. Time, however, must decide the latter question.

LEWIS THOMPSON, M.R.C.S.

London, Feb. 20, 1854.

THE OIL OF VITRIOL BUGBEAR.

"If I might give a short hint to an impartial writer, it would be to tell him his fate. If he resolved to venture on the dangerous precipice of telling unbiased truth, let him proclaim war with mankind—neither to give nor to take quarter. If he tells the crimes of great men, they will fall upon him with the iron hand of the law; if he tells of their virtues (when they have any), then the mob will attack him with slander. But if he regards truth only, let him expect martyrdom on both sides, and then he may go on fearless; and this is the course I take myself."—DE FOE.

SIR,—It is very evident that, in the present interesting state of the oil-of-vitriol controversy, I am not warranted in permitting the attention of the public to be diverted from the real question at issue, even though I myself might take its place, and become an object of enviable admiration. Not but that this preference for the public interest is a severe sacrifice, as it may be long, indeed, before such another opportunity presents itself of gratifying that huge measure of vanity which I am supposed to possess; consequently, if I turn my back, as I now do, upon so fortunate a chance of securing popular applause, I trust that due credit will be given me for an amount of coy reluctance, capable, perhaps, of being conceived, but which can never be accurately described.

Only imagine the advantage (not to say glory) of proclaiming to the world that I alone had been deemed of importance enough in this large metropolis to merit gratuitously a couple of columns of vulgar invective—*all for myself*: yes, two columns replete with the disinterested patriotism of a Pearson, the educational elegances of a Croll, and the well-known veracity of a Dakin! Now, I am bound to confess that, if anything could possibly have seduced me from the path of duty, it would have been this—to show the public my real power and influence by pointing to the forces thus brought against me. Of a truth, Sancho Panza was right—"Some men," said he, "are born great, some achieve greatness, and some have greatness thrust upon them." I belong to the latter most clearly, and shall as certainly be thrust into the highest order of the nobility as Mr. Croll was thrust into the shrievalty. I cannot help it, though I were disposed to do so. When even a man's enemies assist him, he must get on. Only look at those splendid placards in Fleet-street; I am obviously intended to fill the place of the "Great Duke"; it is manifestly thrust upon me. If any one asks why I am thus loaded with distinction, I answer that Great Central shares have fallen just as I predicted they would, and the public "knows the reason why." Moreover, I have succeeded in arousing the furious hate of certain disappointed speculators, whose impotent malice constitutes a pleasing admission of my power and honesty. My reward, therefore, is, "*monstrare digito*," to see my name conspicuously emblazoned in the most crowded thoroughfare

in London. "THAT," say the people as they pass, "is the Man in Pancras-lane—he who exploded the Great Central juggle bubble! Long live the Man in Pancras-lane!! Health and prosperity to him!!!"

But I am recalled from listening to these gratifying exclamations of the populace by Dr. Letheby's last report upon the oil-of-vitriol bugbear, addressed, as usual, to the Court of Sewers. Although a vastly modified affair, and much neutralised in respect to acidity, this last report is still so destitute of that candour and disingenuousness which the case demands, as to justify the severest censure. Instead of openly confessing that he was wrong, Dr. Letheby strives to evade and conceal his previous error in a manner no less ineffective than humiliating. Dr. Letheby now finds 21 grains of sulphuric acid (not oil of vitriol), "a large portion of which would, doubtless, be neutralised by the ammonia of the gas"!! and would then form, of course, sulphate of ammonia, precisely as I stated. But why this change of name from oil of vitriol to sulphuric acid? And why is the actual quantity of ammonia not given? Vain and paltry subterfuge! Does Dr. Letheby think I am to be hoodwinked like a gaping Court of Sewers? "A large portion," indeed; and how much in chemical analysis is a large portion?" Only fancy a broad assertion impugning the conduct of a body of gentlemen, such as the directors of the old metropolitan gas companies, and founded upon no better basis than "a large portion" of arrogant ignorance. What I have to tell Dr. Letheby is, that if this "large portion" amounted to no more than one-half, then there was not one particle of oil of vitriol in the condensed products of the gas he examined. There could not, I say, have been one particle, for the substance present must have been the bisulphate of ammonia, and nothing else. The pains I took in my previous letter to describe the specific nature of oil of vitriol had, of course, a definite meaning and object, the value of which must now begin to be apparent. Under no circumstances can the condensed products from the combustion of coal gas contain anything like so much sulphuric acid as common spring water invariably contains in one shape or other. How preposterously contemptible, then, is the endeavour to get up a hue and cry upon such a matter, with a view to benefit by the ignorant alarm of the million! Common Epsom salts and plaster of Paris consist chiefly of sulphuric acid; and what then?—they contain no oil of vitriol. Now, if we are anywhere to expect that precision of language which chemistry inculcates and requires, surely we have a right to do so from one who styles himself a "professor of chemistry." In an evil hour, Dr. Letheby (seeking, no doubt, for scientific capital) has committed himself to an unfounded assertion; and until he comes forward, and in a manly way honestly confesses his fault, these 21 grains of oil of vitriol shall not be saturated; and even then I think Dr. Letheby owes an apology to the gas world for his no less groundless intimation that the bi-sulphuret of carbon contained in purified coal gas can be practically removed. He insinuates that "science can furnish a remedy," as if science had not been over and over again fruitlessly appealed to, and that at an enormous cost to the old gas companies. Though Dr. Letheby has never been sent for, "*et hinc illæ lacrhrymæ*," yet Davy, Faraday, Wollaston, Henry, Ure, Graham, Brande, Cooper, and, in short, every chemist of celebrity in Great Britain, has been fee'd and consulted on the purification of coal gas by the different companies; and even the very experiments, with the details of which Dr. Letheby now amuses the Court of Sewers, are as old as the younger days of Faraday.

But Dr. Letheby is far too much given to the promulgation of unfounded assertions; and, whilst I regret the necessity for divulging the following facts, a sense of duty, even to Dr. Letheby himself, compels me to publish them at this time.

Less than four years ago, a poor woman named Anna Merritt,* was tried at the Old Bailey for murder, and upon one of these very assertions from Dr. Letheby, the poor creature was condemned to be hanged. Stunned and stupified with horror, the unfortunate woman soon found herself hurried off to a dungeon, where, vainly protesting her innocence, she hopelessly waited the fearful day of suffering. Appeal to man there seemed none, and so she appealed to Heaven for assistance—nor was her appeal unheard. He who alone can save directed the cheering eye of humanity into her dreary cell; and the venerable Dr. Ure was applied to, that his superior knowledge might elucidate the doubtful question of her guilt. With that innate perception which Milton so well describes—

> "When old experience doth attain
> To something of prophetic strain"—

Dr. Ure at once pronounced the woman "not guilty," and the assertion of Dr. Letheby "a baseless vision." Though bent with age and suffering from illness, the veteran philosopher hesitated not on that important occasion to rise at the call of distress. Willingly did he place his long-accumulated knowledge at the disposal of the Under-Sheriff, and confirmed his opinions by the evidence of other scientific authority. The rest is soon told: the Secretary of State heard the facts of the case; a respite was instantly granted, and a fellow-creature thus ultimately saved from an untimely and ignominious end, whilst London was spared the horrors of a judicial murder.

It might have been supposed that so instructive an instance would for ever have taught Dr. Letheby a lesson of caution; and more especially so when to this were superadded the condemnatory observations of the greatest toxicologist of the day; as well as the pungent remarks of Mr. Bright in the House of Commons, that "she was convicted on the rash and unscientific opinion of a medical witness." But, unhappily, Dr. Letheby does not appear to have profited by this lesson; and, therefore, my hopes of producing a perfect cure are somewhat limited. This, however, shall not prevent me from trying; and, whether he chooses to acknowledge his error or not, I make no doubt in the world of proving, and I will prove to the satisfaction of every honest man in this kingdom, that nothing like 21 grains of oil of vitriol ever were obtained, or ever can be obtained, by any living being, from 100 cubic feet of any coal gas, as consumed by the British public throughout her Majesty's vast dominions. I admit of no exception.

LEWIS THOMPSON, M.R.C.S., &c.

2, *Bedford-street, Ampthill-square, March 7*, 1854.

* We purpose next month reproducing an article on this extraordinary case, which appeared in the *Medical Gazette* of Aug. 16, 1850, and is understood to be due to the learned pen of Dr. Alfred Taylor, the distinguished Professor of Medical Jurisprudence of Guy's Hospital.—ED. J. G. L.

THE ALLEGED IMPURITIES OF GAS.

SIR,—The following communication was sent to the *Times* newspaper. I imagined it would have been gladly received, as that paper had taken some interest in the subject a few weeks before, in a leading article, strongly animadverting on gas impurity. I thought therefore, that as impartial journalists, its conductors would feel themselves bound to insert the results of experiment, which although bearing somewhat against their own remarks, yet were accompanied with the usual conditions of the good faith of the writer—my name and address. From what cause it has not been fortunate enough to find favour with the present conductors of that talented, although not unfrequently very overbearing journal, I am unable to say. I may add that, not being originally intended for your columns, my letter contains information on some technical matters which your readers are, doubtless, sufficiently acquainted with. Should you however, think it worth insertion, it is very much at your service.

THOMAS SPENCER.

TO THE EDITOR OF THE "TIMES."

SIR,—In the *Times* of the 10th inst. I observed, in the report of the previous evening's proceedings of the House of Lords, that Lord Torrington, whilst putting some questions to a member of the Government with regard to a recent improvement in lighting the Post-office with gas, said, that "his (Lord Torrington's) attention had been called to the report of a meeting of the City Court of Sewers, in the *Times* newspaper of Jan. 11, from which it appeared that Dr. Letheby, the professor of chemistry, had discovered that there were, in 100 cubic feet of gas supplied to the citizens, 21 grains of *oil of vitriol*." His lordship spoke also of its destructive effects on many articles of furniture, but more especially upon books and papers, which were observed to be mouldering away in consequence of the diffusion of this acid throughout the atmosphere.

I had not seen the City report of the Court of Sewers; but, being a consumer of gas to the extent of having it in every room of my house (bedrooms included) for at least, the last dozen years, and being constantly in the habit of using it as a means of heat for professional purposes, I was somewhat startled on reading this portentous announcement.

I gathered some comfort however, in venturing to suppose the possibility of an error having crept into the statement somewhere, especially as I had never heard that oil of vitriol (sulphuric acid) was amongst the volatile impurities likely to be found in coal gas on reaching the consumer.

Although thus doubting the exactness of the fact *à priori*, yet as nothing could be easier than to put it to the test of experiment, at least in my own case, I resolved to do so, vulcanised indiarubber tubing enabling me to extemporise a simple, but at the same time effectual, apparatus for the purpose. It consisted of a double-necked pint bottle of white glass, which was half filled with a solution of chloride of barium. One of its necks was connected with the gas service-pipe by means of a flexible tube, whilst the other was fitted with a burner. It was so managed that the whole of the gas which passed through the bottle should also pass through the chloride of barium *before* its combustion at the burner. By this arrangement (one well known to chemists), had only one foot of the gas contained even a smaller proportion of oil of vitriol than that named, its detection became a matter of certainty. Having ascertained that it was thoroughly air-tight, I allowed, by the registering of my meter, rather better than 100 feet of the gas which is supplied to me, by the Phœnix Company I believe, to pass through the apparatus, after which, and on minute examination of the solution of barium, I was unable to discover even a trace of sulphuric acid.

Now, as no better method of detecting this acid is known to chemists, the result of this experiment greatly strengthened my belief in the existence of some mistake in the statement referred to

by his lordship. Indeed, I should have been exceedingly surprised to have found 21 grains of oil of vitriol, *as such*, in even 1000 feet of any of the coal gas entering into the metropolitan consumption, as, apart from actual experiment, there are obvious chemical grounds in support of this opinion into which I need not at present enter.

It afterwards struck me that possibly the real meaning of the statement in question was—not that *oil of vitriol* is contained, *per se*, in the metropolitan gas, but that as much sulphur is contained in 100 cubic feet as would go to the formation of 21 grains of oil of vitriol, *if* converted into this acid by the addition of atmospheric oxygen. Although on this view, I could not well see why oil of vitriol should have been named at all, yet, in the belief that this interpretation was probably the one intended to be conveyed, I thought it worth while to make another experiment on my own supply, to ascertain whether it contained any notable quantity of sulphur in a less-combined form than in oil of vitriol. At the same time being fully aware that minute quantities of sulphur are found in imperfectly purified coal gas, usually combined with hydrogen, I should not have been at all surprised to have found a little on the present occasion. To make the second experiment, I used the same apparatus, arranged in all respects as before—the only difference being that a solution of subacetate of lead replaced the chloride of barium used in the first. I may explain that any sulphur in the gas subjected to this trial, a trace of which in combination with hydrogen, might have been expected, was quite as certain to be detected in the solution of the lead, as the oil of vitriol in the solution of barium.

The meter having been previously noted, I again allowed rather better than 50 feet of gas to pass through the bottle, but without the solution of lead being even slightly discoloured.

This result, although again negative, proved to demonstration not only the absence of a trace of sulphur in combination with hydrogen, but it also proved, with equal certainty, the entire absence of *sulphurous* acid (a gaseous body resulting from burnt sulphur), as, had any of this combination of sulphur been in the gas which passed through the acetate of lead, it would have been found in the shape of a white insoluble precipitate (sulphite of lead) at the bottom of the solution.

Being aware that there was yet another form in which sulphur might possibly exist in the gas without being detected by the tests which I had hitherto used, I considered the examination incomplete without a further search. Indeed, I should have made the experiment I am about to relate at first, but knowing it to be attended with some trouble, whilst I trusted the others would have yielded more positive results. In a word, I expected to have found some traces of sulphur, although certainly not, as *oil of vitriol*.

With little additional trouble however, the arrangements for this other experiment were ultimately made, the object of which will be better understood by explaining that, in addition to the combinations named, sulphur may exist in coal gas combined with carbon, in which state it is known to chemists as "sulphuret of carbon." When this substance is found in gas it is exceedingly difficult to extract it on the large scale by the ordinary methods of purification, short of actual decomposition of the gas itself. It is seldom that it is known to exist in gas, and when so by inference, as its *direct* detection presents some difficulty to the chemist. The sulphur contained in it, however, may be collected by condensing the products of the combustion of the gas by means of a small distillatory apparatus, which it is, perhaps, not necessary to describe further than by explaining that, when sulphur is present in coal gas in the state of sulphuret of carbon, its amount may be indirectly estimated with great exactness. This is effected by first condensing, and then conveying, the aqueous products of the combustion of the gas under examination into a solution of nitrate of lead. The sulphur, if any, is estimated by the weight of the resulting sulphite of lead.

It will be sufficient to state the result of this experiment in a few words. On subjecting about 50 cubic feet of the same gas to this, the severest of all the tests for the detection of sulphur, I was unable, as in the former cases, to discover a trace. So far, then, I am perfectly satisfied that the gas which is supplied to me is by no means obnoxious to his lordship's general denunciation of the metropolitan supply. Nor do I think that it has been so at any time since I have used it; nor also, that it forms any notable exception to that generally supplied by other companies.

I admit that previous to making the experiments, I expected to find some traces of sulphur—not indeed, in anything like the quantity referred to in the report—but I hardly expected to find gas so absolutely free in all respects from this very undesirable ingredient. I need scarcely remark that it argues great purity in the materials used, or perfection in the mode of purification, or both.

The result of these experiments, although limited to the supply of one company, all but confirm me in the opinion that the report to the Court of Sewers did not intend to say that 21 grains of *oil of vitriol* was actually contained in 100 feet of any gas, but as already intimated, that it must have reference to such a quantity of sulphur as would form 21 grains of this corrosive fluid.

Should this be the true interpretation, and I am unable to conceive any other, I must say that where exaggeration is not intended, it is not the best way of putting the case, in a scientific report. It has caused the old story of the "Three Black Crows" to be enacted over again. This will be sufficiently obvious on closer examination. Large then, as the quantity of sulphur in 21 grains of oil of vitriol is, in relation to 100 feet of gas, let us see what it amounts to in reality. If we omit fractions, it will be found on calculation to amount as nearly as possible to 7 grains of sulphur!

Although every chemist will recognise this to be so, it may, perhaps, be necessary to explain that 8 grains of sulphur require 12 grains of oxygen to form 20 grains of dry sulphuric acid. But it is not oil of vitriol until it has received 20 per cent. of water, which will reduce the quantity of sulphur in 21 grains of oil of vitriol to—rather under strictly—but say, 7 grains.

Should however this, or any other proportion of sulphur be found in gas, it by no means follows that on its discharge into the atmosphere it would invariably be converted into oil of vitriol. As in the ordinary process of combustion, any sulphur which might exist would be, as a rule, converted into sulphurous acid, but not *sulphuric acid*, or oil of vitriol, although it is true that, under some peculiar atmospheric circumstances, a very small proportion indeed might be converted into this latter acid.

I may better explain this by saying that when sulphur is burnt on the point of a common match, for example, such sulphur is changed into a gaseous body known to chemists as sulphurous acid. Although it has a tendency to combine with atmospheric moisture, the resulting fluid is by no means so corrosive in its effects as oil of vitriol, nor can it be so designated. But should ammonia be present, either in the gas or in the atmosphere (in the latter it is found at all times, more or less), the sulphurous acid would then combine with such ammonia, the ultimate, although practically immediate effect of which would be, the production of sulphate of ammonia—a substance in itself perfectly harmless.

While on the subject, I may remark that much more oil of vitriol is *directly* discharged into the atmosphere as a consequence of the use of lucifer matches, than were all the gas consumed in the metropolis to contain sulphur to the extent named in the report alluded to by Lord Torrington.

I have estimated the sulphur on a number of them taken at random from a box of those in common use, and I find that it averages considerably more than half a grain to each match. A dozen of them will yield 7 grains of sulphur. It follows, therefore, that every 12 will throw as much sulphur into the atmosphere as 100 cubic feet of the worst possible coal gas—with however, this very material difference, that the sulphur contained in the gas is discharged on its combustion as sulphurous acid only, whilst a great proportion of that on the lucifers is discharged as *sulphuric acid*, or vitriol. This difference arises from the lucifers being tipped with a substance containing chlorate of potassa, which promotes ignition, along with the usual sulphur. Now, this substance furnishes the sulphurous acid at the moment of its formation, with an additional atom of oxygen, which has the effect of changing it into oil of vitriol. I do not mean it to be inferred that all the sulphur which undergoes combustion at the point of a lucifer is converted into oil of vitriol; but that a larger proportion of it will be converted into this very corrosive substance, in consequence of the presence of chlorate of potassa, than if the same quantity of sulphur were to undergo ordinary combustion along with coal gas.

It is far from my intention to deny that the products arising from the excessive combustion of sulphur in any shape are, *per se*, deleterious, and doubtless, contribute much to contaminate an atmosphere already good; but on the other hand, I am convinced that the deoxidising properties of sulphurous acid do not always effect unmixed evil in the atmosphere of a crowded town. However this may be, I think it might be clearly proved that as respects the aggregate amount of sulphur which is artificially discharged into the atmosphere by the combustion of ordinary fuel, we the public, are greatly gainers by the introduction of gas, as there can be no doubt that—altogether apart from its economy and convenience over every other means of lighting—*less* sulphur will be found in the atmosphere than if gas were not in use. This will be obvious on taking into account the large quantity of coke which its manufacture contributes to the metropolitan supply of fuel. I have not the statistics of metropolitan gas lighting near me; but if we take its annual consumption of coal to be 400,000 tons (which, I think, will be found within the mark), this quantity will yield at least 200,000 tons of coke available for sale. Now each ton of coke has more than equal heating power—to say nothing of its *non-production of smoke*—than the same weight of coal; but, if we say equal only, we shall arrive at the fact that the manufacture of gas contributes at least 200,000 tons of fuel, which is comparatively free from sulphur, all of which enters into the metropolitan consumption, and consequently, supersedes an equal, or in fact, larger amount of coal, which would necessarily contain the whole of its native sulphur. By referring to the aggregate metropolitan consumption of coal, and taking at the same time, the average per-centage of sulphur it contains, it would thus be easy to show the ratio in which the atmosphere of this, and all large towns where gas is manufactured, gains, in freedom from sulphur, by its introduction. I am at the same time, fully aware that the sulphur originally contained in the coal is not so entirely abstracted in the process of gas manufacture as to render the resulting coke free from it at all times; but that it is so to a great extent, no one will, I think, venture to deny.

I beg to state that I do not intend this communication to be any apology for bad gas, or to screen the shortcomings of the companies from public censure, where deserved. Nor am I in any shape, even professionally, connected with any of those in the metropolis, further than having to pay for what gas I consume, which in other respects, I sometimes think is not quite as good as it might be; still I am not inclined to grumble very much when I take into consideration its comparative cheapness, its convenience, and to crown all, its absolute superiority over every other means of affording light.

Even on the score of health, in the strictest sense of the word, and in non-liability to accidental fires, I could show that the public are largely gainers by the introduction of gas.

Allow me, in conclusion, to repeat that I remain strongly under the impression that the amount of impurity mentioned in the City report, and referred to the other evening in the House of Lords as being general, must be an exceedingly exceptional case, and which I am persuaded has suffered exaggeration from the inexact manner in which it was told.

I may add, with regard to my own motive in writing, that when one connected professionally with science finds the public likely to get wrong on such matters by the spread of doubtful or imperfect information, it becomes, to a certain extent, his duty to contribute his share to set them right, more especially when such errors find their way into the Legislature.

THOMAS SPENCER, F.C.S., &c.,
London, Feb. 20, 1854. Analytical and Consulting Chemist.

MR. STILL OF THE CHARTERED *VERSUS* MR. STILL OF THE GREAT CENTRAL.

SIR,—It is with extreme reluctance that I again notice any statements emanating from Mr. Still, the present superintendent of the Great Central Gas Works; and my only motive for now doing so is lest his incorrect assertion may acquire a semblance of truth from their remaining uncontradicted.

Mr. Still was formerly in the service of the Chartered Gas Company, as manager of their Brick-lane station; and one would have thought that a sense of propriety and good taste might have induced him to refrain from obtruding himself before the public in any discussion involving such delicate points as are raised in the following letter, addressed by him to a contemporary:—

"Sir,—the quality of the gas supplied to the City of London having been the subject of considerable useful discussion, but which has of late had some acrimony imported into it, the testimony of one who has been manufacturing gas in London during the last seventeen years, may be of some value to your readers.

"But for the discussion alluded to, I should have supposed there could have been no doubt on the minds of those conversant with the subject, that the gas now supplied, not only in the City, but to the entire metropolis, is greatly improved in its quality, and for many sufficient reasons.

"As a matter of fact, I may state that, up to the year 1851, I always made gas from Newcastle coal alone. A small store of cannel was generally, but certainly not always, at my disposal, which, however, was never used but in cases of great necessity, such as would be occasioned by a 'three-days' fog.'

"Carbonising without the use of cannel was not confined to the establishments under my management, for I know that the same system prevailed throughout London.

"When I lately read, therefore, in the public journals that a gentleman of standing openly stated that no alteration had taken place in gas manufactured in the City of London during the last 35 years, I could but be astonished that any one connected with a gas company should know so little of its workings. Surely, during the last quarter of a century, chemical science has done something for us in producing a better gas, even from the same material; but, apart from all hypothesis, I find, on looking over the list of coals brought into London for gas manufacture during the past year, not less than eight per cent. of the whole has been cannel.

"I would stake my reputation as a gas manager that eight per cent. of cannel would increase the illuminating power of Newcastle coal gas upwards of twenty per cent.; and this is really less than the increase of illuminating power of the gas as at present manufactured in London.

"Although it was not customary, till within the last three or four years, to ascertain the illuminating power of the gas daily manufactured, yet I am quite aware that the average power was not equal to more than nine or ten sperm candles. Now, however, the same mode of testing daily carried on gives an average of more than fifteen candles.—I am, sir, your obedient servant, "A. H. STILL, Manager.

"*Great Central Gas Works, Bow common-lane.*"

Mr. Still asserts, as a matter of fact within his own knowledge, "that up to 1851 he always made gas from Newcastle coal alone," and that the average illuminating power of such gas "was not equal to more than nine or ten sperm candles."

Will this consistent gentleman be kind enough to explain the discrepancies existing between the above statements and the following entries in his own handwriting to be found in the company's books at the Brick-lane Station?—

"April —, 1850. Illuminating power, 14 sperm candles, six to the pound, consuming 130 grains per hour."

"May 28, 1850. Illuminating power, 12½ Miller's candles;
Ditto, 12 Batty's do.:
averaging 13 candles of the standard of 120 grains (sperm) per hour."

"Feb. 25, 1851. Illuminating power, 14 candles, 2-inch flame, consuming 120 grains (sperm) per hour."

The same quality of Newcastle coals used in 1850 is still used by the Chartered Company; and Mr. Still assures us that at the first-named period no cannel whatever was employed by him in the manufacture of gas.

Whether, after this *exposé*, Mr. Still's evidence has any value, I leave to the judgment of your impartial readers; but I cannot forbear remarking upon the sneer with which he affects to regard the assertion of the respected chairman of the City Gas Company, that the same process, substantially the same apparatus, and the same coals, are now employed by his company as were employed thirty-five years since. It is well known that three-fourths of the cannel coal imported into London in 1853 was consumed in compensating for the loss of illuminating power consequent upon an increase of 10 or 12 per cent. in the bulk of the gas obtained from a given quantity of coal. The City Company produces—or did till within a late period—14-candle gas from common Newcastle coal alone, as did Mr. Still in 1850; and the question has yet to be determined, whether gas of that quality is manufactured at the lowest cost upon the old or the new systems—from common Newcastle coal alone, at a low temperature, or from the same coal at a high temperature, with the addition of a portion of cannel coal.

London, March 9, 1854. A CIVIL ENGINEER.

THE LATE ACCIDENT AT GILLINGHAM.

SIR,—I have not been to Gillingham, but I read the report of the accident in your useful JOURNAL; and the conclusion I came to as to the cause of it is such as I think most of your practical readers must also have come to, namely, that as fast as the gas was being propelled from the retorts into the holder, it, with the atmospheric air therein, was let off at the stand-pipe, so that there was not sufficient pressure left to lift the holder. The gas ignited under such circumstances would almost certainly explode.

As to the holder being prevented from rising by the guide rollers binding on their spindles, and thereby increasing the danger when the light was applied to the stand-pipe, such a proposition is a piece of complete nonsense, for it is quite evident from your report that the holder did rise when the gas was exploded therein; and, moreover, if there had been sufficient pressure on to raise it when working quite free, suppose it to be equal to no more than would raise a column of water half an inch high, the accident could not have happened in the way it did.

J. H. J. has yet to learn that the danger consists in applying a light to any aperture open to a body of gas when there is not sufficient pressure on to put the gas in motion to feed the aperture.

The larger the aperture the greater the pressure necessary to ensure safety. The holder being bound at the guide rollers, would only increase the pressure by the friction being added to its weight, supposing, of course, that the gas was being propelled into it faster than it was let off.

Your insertion of the above remarks will oblige, and may, perhaps, help to dispel the mist J. H. J. has thrown over that sad affair. C. DYER.

Gas Works, Portadown, Feb. 18, 1854.

SIR,—The letter of J. H. J., in this month's JOURNAL, explaining the above, is not, I think, correct—at least, only *partially* so. If the tank had been *full* of water before they had *commenced* making gas, the accident could not have occurred; for, as all your readers know, *coal gas itself is not explosive*, only when mixed with atmospheric air in any proportion of from four to twelve parts of air to one of gas.

Now, I think the evidence at the coroner's inquest proved that gas was made before the tank was full. Supposing, therefore, the holder to be 30 × 10 feet, and two feet of the tank were not filled with water, then there would be in the holder about 1400 cubic feet of air, or perhaps, with what there might be in the crown, 2000 cubic feet, requiring only about 200 cubic feet of coal gas to make it an explosive compound something similar in its properties to gunpowder. If this compound had not existed, the only effect by the hanging of the holder would have been that the light would have gone out; as, however, it did exist, there was, consequently, the explosion. GEO. BOWER.

St. Neots, Feb. 21, 1854.

SIR,—Having observed in your JOURNAL of the 10th ult., an article explanatory of the cause of the melancholy accident which occurred at Gillingham Gas Works, I beg to state that I was eye-witness to an occurrence of a similar kind, about sixteen years ago, but happily unattended with any injurious consequences.

At the commencement of a gas work then under my management, after charging the retorts, the *cran* on the top of the gasholder was opened, as customary, to get rid of the atmospheric air, and the *cran* shut when I judged by the smell of the escape that this had been accomplished. No light was then applied; but shortly afterwards one of the stokers reopened the *cran* and applied a light, when an instantaneous ignition of the contents of the gasholder was the consequence, raising the gasholder and stoker to the top of the columns, which immediately sank down again without any injury either to the stoker or the gasholder.

I consider the cause of the accident at Gillingham was similar to what took place with myself, namely, the presence of an undue amount of atmospheric air still present in the gasholder, and thus

forming an explosive mixture, but at Gillingham in greater volume than with me. It is well known that coal gas itself is not explosive, but it becomes so when mixed with atmsspheric air in any quantity ranging from 1-14th part up to 1-6th parts of gas, and that both gasholders had contained a mixed gas within this explosive range.

I consider the reason assigned by your correspondent J. H. J. for the occurrence at Gillingham to the circumstance of the locking of the gasholder in the tank to be erroneous. The main pipes are at least as firmly locked in the earth as the Gillingham gasholder was in its tank; and to the open ends of one of these mains (although the pressure be off) apply a light, and no explosion takes place, and for this plain reason, that the gas is not mixed with atmospheric air, and the ignition of the gas only takes place on presence of atmospheric air.

J. R. Garvie.

Gas Works, Burntisland, March 4, 1854.

GAS FITTERS' EXHIBITION FUND, 1851.

Sir,—The answers by "Another Subscriber" to my questions, inserted in your Journal of the 10th of January last, is, I consider, far from satisfactory. The subscribers to the Fund are resident in various parts of the kingdom, and cannot refer to the records alluded to. I would, therefore, suggest that the whole of the proceedings of the association should be inserted in the Journal of Gas Lighting, for the information of non-resident subscribers, and the expenses paid out of the surplus (now for the first time) stated to be in the London and Westminster Bank.

A Subscriber.

London, March 6, 1854.

Register of New Patents.

William Smith and Thomas Phillips, of Snow-hill, in the county of Middlesex, gas engineers, for "*An improved boiler.*" Patent dated Aug. 5, 1853.

The invention consists of an improved boiler for heating bodies of water in pipes, baths, and other vessels. These boilers are commonly called circulating boilers. The patentees' boilers consist of a number of concentric hollow cylinders, in which a very thin body of water is constantly exposed to the action of the heat. In the interior of this improved boiler the patentees form a vacuum or air chamber, consisting of a cylinder of copper or other metal, closed at both top and bottom, and made air and water tight, and so placed that no water can enter therein. Round this chamber an outer cylindrical case is formed, which is also provided with a top and bottom, so as to enclose the chamber above mentioned, leaving a small space at the top, bottom, and sides, for the water—thus forming a hollow cylinder, with a hollow head and bottom, which comprises the inner portion of the boiler. Round this hollow cylinder or inner boiler there is another hollow cylinder, which is similarly constructed, except that an aperture is left at the head, while the bottom is left free. This outer cylinder or boiler encloses the first or inner one, leaving a space all round and over the top, for the purpose to be shortly explained. The inner and outer cylinders or boilers are connected by short tubes, through which the water flows from one to the other. Immediately over the aperture in the top of the outer cylinder or boiler there is a flat circular hollow head, which is also connected with the cylinder below by tubes, through which the water flows to or from the cylinders. The whole are enclosed in an iron case; and immediately above the boiler-head last described, a cast-iron plate is fitted, so as to confine the heat upon the boilers. In this cast-iron plate there is an aperture in the centre, through which the products of combustion are conducted to the bottom of a second or upper boiler, which is of a circular form, with a flat bottom. An opening is left between the sides of this boiler and the outer iron case. In the interior of this boiler there is also a hollow chamber, which is fitted into the boiler, and renders it steam-tight. This chamber is open at the top, and is closed with a loose cover, and is heated by the steam from the heat-chamber or linen-warmer. The gas-burners, or other heating medium, is applied at the bottom of the cylindrical part of the inner boiler; and, after coming in contact with the bottom of the inner cylinder or boiler, passes under the same, and thence up the space which is left all round between the inner and outer cylinders or boilers, till it comes in contact with the under side of the head of the outer cylinder or boiler, under which it returns over the head of the inner cylinder or boiler to the aperture in the head of the outer boiler, through which it passes, and comes in contact with the under side of the flat circular boiler-head before mentioned, under which it passes to the sides thereof, and thence, being confined by the cast-iron plate, it passes over the top of the flat boiler-head, till it arrives at the aperture in the said plate, through which it passes, when it comes in contact with the bottom of the upper boiler, and then passes up between the iron case and the sides thereof, till it reaches the highest altitude at the top, where the waste heat (if any) is either carried off through a pipe into a flue, or ventilates through a number of apertures provided for that purpose under the cornice.

The patentees claim the boiler and linen-warmer as described, and all such modifications thereof as may be, so long as the principle of their invention is preserved.

William Smith and Thomas Phillips, of Snow-hill, in the county of Middlesex, gas engineers, for "*An improvement in gas stoves.*" Patent dated Aug. 5, 1853.

The patentees claim, by their improvement, to obtain in gas stoves the appearance and effect of an ordinary coal fire from jets of gas radiating upon lumps of glass, or lumps of glass and metal ore laid upon a piece of plate glass in the bottom of the stove. The reflection from these lumps is shown through plates of coloured glass, arranged between the bars in front of the stove, and thus presents the appearance of hot or burning coals in an ordinary coal fire, while the heating effect is given to the products of combustion by causing a circulation of the atmosphere of the room or building through air boxes in the interior of the stove. These boxes are fitted together, so as to exclude the products of combustion, and are supplied with atmospheric air from under the plinths of the stove at the level of the floor, or nearly so, by means of pipes, the lower ends of which are open. The air, when heated, passes into the room or building through apertures provided for the purpose, in front of the stove. There are two of these air-heating and circulating boxes, one of which is placed in the chamber of the stove, immediately over the grate; the other consists of a chamber at the top of the stove. The upper and lower chambers are separated by a cast-iron plate. On the top of the upper chamber there is an aperture to allow the heated air to pass into the open space, which is left all round and over the outer plates of the stove, between the same and the recess in which it is fixed. The air passes to and from this recess through open fretwork, round the front of the stove. In the upper chamber of this stove there is an inverted box, which receives the products of combustion after they have acted upon the pipes and heating box, in the lower chamber. The radiation of heat from this inverted box acts upon the air in the upper chamber, which is supplied by pipes in a similar manner to the heating box in the lower chamber. From the inverted box, a pipe conveys the waste products of combustion into the flue or chimney. The stove may be fixed in the recess of an ordinary chimney opening, which should be sufficiently large to allow a space at the backsides and top of the stove, for the circulation of air, and which, with the exception of an aperture for the waste-pipe, should be as nearly as possible air-tight, to prevent the escape of heat. The stove is heated in the following manner:—The gas-burners are arranged between the cheeks and the back of the sides, and are concealed from view by a plate in front. The products of combustion pass up the lower chamber, and come in contact with the iron plate which divides the upper and lower chambers, passing under which plate and through an aperture therein, they enter the inverted box in the upper chamber, and thence pass through the waste-pipe into the flue or chimney. The products of combustion also act upon the plates which compose the outer case of the stove, and the radiation of heat from those plates, together with the heat from the aperture to the top of the stove before mentioned, acting upon the air surrounding the stove in the chimney-place recess, and heats the same, and causes it to circulate. The heating medium, therefore, admitted into the room or building, is simply the atmosphere of the room, heated, and circulated by the products of combustion, without coming in contact or being mixed therewith.

The inventors claim the construction of a stove in which they produce the appearance and effect of an ordinary coal fire, as described.

John Marten, of High-street, Marylebone, in the county of Middlesex, for "*An improved shade for gas-burners and lamps.*" Patent dated Aug. 6, 1853.

The invention consists in the construction of shades in two parts, or of two distinct and separate pieces of material—the upper part being formed of ground glass, opal, or other semi-transparent substances, and the lower portion of glass, which should be perfectly transparent. The lower portion of the shade is employed for supporting the upper part, thus obviating the necessity for using a large metal holder to support the shade, according to the practice hitherto; and, by thus reducing the size of the shade-holder, the patentee removes or lessens very considerably the obstruction which the metal shade-holders, as hitherto constructed, present to the transmission of the rays of light from the flame of the lamp or gas-burner which the shade surrounds.

The patentee admits that shades have been heretofore constructed partly of transparent and partly of semi-transparent glass, but they have been made of one and the same piece of glass, so that, the openings being small, great inconvenience has attended their use, with the risk of breaking in cleansing them. By making the shade of two distinct parts, the patentee claims that their construction is rendered much cheaper, and that they can be cleansed more easily and effectually.

He claims the construction of an improved shade for gas-burners and lamps, in two distinct and separate parts or pieces, in the manner described.

Moses Poole, of Avenue-road, Regent's-park, for "*Improvements in regulating the flow and pressure of gas and other fluids.*" (A communication.) Patent dated Aug. 8, 1853.

This invention, which has for its object the delivery of aëriform fluids at a certain uniform pressure, consists in combining the use of two or more governors or regulators, which act independently and in succession. The description of governors or regulators which the patentee prefers employing, are those where inverted vessels are used, working in quicksilver or other fluid, and connected with the induction valves. Supposing the apparatus to be arranged for regulating the supply of gas (or other aëriform fluid), the main or supply-pipe where the regulation is to take place is arranged to communicate in succession with two or more chambers, each having a governor or regulator, and so that no gas can pass from the main or supply-pipe to the furthermost chamber without having passed through, and being regulated more or less perfectly by, the previous regulators or governors. By these means, the gas—supposing it to come up to the first governor or regulator at a pressure exceeding that which it is desired to deliver it at—will act on the governor and tend to close the valve, and thereby restrict the passage of the gas into the first chamber. The gas then passes from the first chamber or governor into the second, and, if it be still at an excessive pressure, it will be again retarded in its passage, and so on, according to the number of governors and regulators combined and caused to act in succession.

The patentee claims the combination of two or more governors and regulators, so that they may come into action in succession.

Read Holliday, of Huddersfield, in the county of York, for "*Im-*

provements in lamps, and in lanterns used therewith." Patent dated Aug. 12, 1853.

The improvements which the patentee claims apply to the lamps used for burning liquid hydro-carbon, and such as those for which he has obtained patents; and they consist in certain arrangements and combinations of the parts so as to adapt them for use in lanterns, and other situations—such as in railway carriages, or as ship and signal lights, where they will be subjected to considerable motion.

He claims the arrangement and combination of parts of lamps used for the burning of liquid hydro-carbons, and of lanterns used therewith, as explained in the specifications.

Richard Archibald Brooman, of the firm of Robertson, Brooman, and Co., 166, Fleet-street, in the City of London, patent agents, for "*Improvements in the manufacture of fuel.*" (A communication.) Patent dated Aug. 12, 1853.

The invention, which relates to the manufacture of fuel from small coal, consists—1. In the use of Cuba, or other similar bitumen alone, or combined with resin, as a means of solidifying or agglomerating small coal into masses fit for moulding. 2. In the use of water in which clay has been dissolved and allowed to subside, with or without the addition of gum arabic, gum Senegal, or other similar gum, or glutinous matter, for the purpose of moistening the mixture of small coal, resin, and bitumen. This process produces a fuel superior, as a combustible and steam generator, to any coal hitherto employed, burning freely, durably, and without smell to the last.

The patentee claims—

1. The employment of new bitumen alone, or combined with resin, as a means of solidifying or agglomerating small coal into masses.

2. The employment of water in which clay has been dissolved and allowed to subside, and to which gum arabic, &c., may, or may not, have been added for the purpose of moistening this compound.

William Mann, of Stepney, county of Middlesex, gas engineer, for "*Improvements in the purification of gas, and in the treatment of the material used in such purification.*" Patent dated Aug. 23, 1853.

The first of Mr. Mann's improvements consists in making ammonia combine with a certain portion of the water with which the lime is slacked to prepare it for what is called lime purifying. This he effects by causing common atmospheric air, warm or otherwise, or any other suitable article, to pass through a vessel or vessels in which ammonia is generated or exhaled, and from thence to the purifier, which has just received a fresh charge of lime, the water in which will take up the ammonia, and the air, now free from the ammonia with which it was loaded on entering the purifier, may be allowed to escape into the atmosphere, or pass through a vessel or vessels in which coal gas has been wholly or partly condensed, for the purpose of bearing ammonia to the water which is mixed with the lime in the purifier. When the water will take up no more of the ammonia contained in the air (which may be ascertained by any of the known tests), the purifier is ready for use, and the vessel through which the air was passed away may be employed for condensing purposes. The number of the vessels would be regulated by the number of sets of purifiers. When gas containing sulphuretted hydrogen and carbonic acid is passed through a vessel containing hydrate of lime and liquid ammonia, the carbonic acid will be converted into carbonate of ammonia, and the lime, having only the sulphuretted hydrogen to take out, will purify a much larger quantity of gas than usual. If the gas, after passing the purifiers, be passed through a water scrubber, all the ammonia compounds will be removed. When the lime has become foul, noxious vapours are prevented from escaping into the atmosphere by causing carbonic acid, or carbonic acid and common air in about equal proportions, or, what is better, the products of combustion of carbon—such as coke or charcoal—to pass through the foul lime, either in or out of the purifiers; but to bring off that quantity of sulphuretted hydrogen which would escape if the lime were exposed to the air in the usual way, and to prevent the sulphuretted hydrogen from escaping into the chimney where the products of combustion, or other gases which may be used to deodorise or ventilate the foul lime, are returned. The patentee causes the deodorising or ventilating medium to pass through any of the materials known to take up sulphuretted hydrogen, and which will not give it off again when exposed to the air. The deodorising or ventilating medium will also bring the ammonia that is left in the purifiers away with it, which can be taken out by a small scrubber, so that the products of combustion or other gases, used to deodorise or ventilate the foul lime, will take no impurities to the atmosphere, and the lime, when taken from the purifiers, will be free from noxious vapours. All danger of explosion is avoided by the small quantity of oxygen present in the deodorising or ventilating medium, even when atmospheric air is in part used.

The patentee claims as his invention—

1. The purifying of gas, for the purposes of illumination and heat, from carbonic acid by ammonia in combination with the water which is mixed with the lime to prepare it for dry-lime purifying.

2. The means of ventilating or deodorising the foul lime as described, and that no noxious vapours can escape into the atmosphere.

3. The using a deodorising or ventilating medium which cannot form an explosive mixture with coal gas.

[As this patent is, we find, actually in use at one of our large metropolitan gas works, and is said to answer extremely well, we intend next month to give a detailed account of its practical working and peculiar merits.]

Parliamentary Intelligence.

HOUSE OF LORDS—Thursday, Feb. 9, 1854.

GAS IN THE POST-OFFICE.

Viscount Torrington rose to put a question to the Postmaster-General, with a view to ascertain the accuracy of the statements that had appeared in the public papers as to the quantity of gas now consumed in the London Post-office compared with the quantity consumed prior to the introduction of Mr. Leslie's patents into the department; and to ask whether he had any objection to place any official returns connected with the sanitary and economic results on the table of the House? His lordship said that he was anxious to claim the indulgence of the House for two or three minutes while he stated the reasons why he asked for these returns. He believed that there was a strong feeling abroad with regard to the very inferior quality of the gas which was now supplied to the metropolis, and his attention had been called to the report of a meeting of the City Court of Sewers in the *Times* newspaper of Jan. 11, from which it appeared that Dr Letheby, the professor of chemistry, had discovered that there were in 100 cubic feet of gas supplied to the citizens 21 grains of oil of vitriol. There could be no doubt that that was highly injurious to the health of the town, and that in all public buildings where such gas was consumed there was a fearful destruction of such property as books, pictures, and the like. Upon Jan. 18, Mr. Leslie, the gentleman who had ventilated the Post-office, wrote to the City Court of Sewers, and called attention to the fact that six years ago, when he undertook to ventilate and relight the Post-office, he had pointed out the evils that were then arising, and, at the same time, he observed upon the alterations which he had been permitted to make. Those alterations were worthy the attention of their lordships and the public, because they were most important. The result of them was, that the gas had been entirely purified from its deleterious qualities; that, in spite of the enormous increase in the business of the Post-office within the last five or six years, there were 800 less burners there now than then; that, although not above one-half the quantity of gas was consumed, the Post-office was better lighted than before, and that in the cost of gas there had been a saving of something like £50 per week. He believed that Mr. Leslie's plan had been adopted in the *Times* office, and in many other buildings, with great success; and he thought it was desirable that all the public offices throughout the country should have the same advantage. Hearing, as he did, from all quarters, complaints of the bad ventilation and bad lighting of both Houses of Parliament, he wished, in moving for these returns, to point out this important fact—that their lordships were doing all in their power, by means of decorative art, to make the Houses of Parliament elegant, but that, if they did not take care that the gas used was pure and of a proper description, all their works of art would be entirely destroyed. (Hear, hear.) The remedy was in their own hands.

Viscount Canning said that he should most readily lay upon the table the papers which had been asked for by the noble viscount, and he believed that they would in all particulars bear out the statement which he had just made. He did not know, however, that he had any documents which could show the effects of the new system in a sanitary point of view, the only test of that being in the health of the persons employed there; but he could say with confidence that there was but one opinion throughout the staff in the Post-office as to the advantages which had been derived from the application of Mr. Leslie's patent. With regard to the merits of the scheme in a financial point of view, he was enabled to afford some precise information. Previously to Mr. Leslie's apparatus being applied the cost of gas was about £80 a week, whereas now it was not much more than £30. At the same time, there had been an enormous increase in the business of the Post-office, in the number of rooms which were lighted by gas, and in the number of hours in which gaslight was required. (Hear, hear.) If he could find any returns which would afford information upon the sanitary part of the question, he should be happy to produce them.

The Marquis of Clanricarde trusted that, when considering the lighting of that House, their lordships would revert to the evidence taken before the committee nearly two years ago, and that they would read the report of that committee, and pay some attention to the recommendations which it contained. If this were done, he hoped that they should be supplied with a better light not only by gas but by day; because, after all, whatever was the beauty of their decorations, it was absurd that they should assemble in a room in which at five o'clock on a summer afternoon it was impossible to read without gas, when in every other room in the metropolis they could read perfectly well by the natural light of day. (Hear, hear.) He said that this was a monstrous thing, quite unsuited to the present age, and unbecoming the good sense to which their lordships were supposed to attain in all their proceedings. He hoped, therefore, that by Easter they should have those improvements in this matter which he thought they had a right to expect. He should like to know who it was that had any real power over these things? They perfectly well knew that the architect who was charged with the immediate operations had the power, because they felt it; but he should like to know who was supposed to have the power and to be responsible. (A laugh.)

Legal Intelligence.

COURT OF QUEEN'S BENCH.—Friday, Jan. 27, 1854.

The Watching and Lighting Act (3 & 4 William IV., c. 90.)

REGINA *v.* THE OVERSEERS OF WARBLINGTON.

This was a rule *nisi* to show cause why certain justices of Hampshire should not issue their distress warrant for levying, by distress and sale of the goods of the overseers of the parish of Warblington, the sum of £150, directed to be paid by an order (July 6, 1853) of five inspectors, duly elected for carrying the Watching and Lighting Act (3 & 4 Will. 4, c. 90) into effect in the district of St. James Emsworth, in the said parish.

The ecclesiastical district of St. James Emsworth is attached to the chapel of St. James, in the parish of Warblington, by an order in council (June 4, 1841), and in the district, besides the chapel of St. James, there are one unconsecrated proprietary chapel, called St. Peter's, and two dissenting chapels; and in the rest of the parish of Warblington there is the church of Warblington only.

On Oct. 27, 1852, a requisition was served on the churchwardens, signed by certain ratepayers of the district, requesting them to call a meeting, for the purpose of determining whether the Watching and Lighting Act should be adopted in the said district. Five copies of the requisition were made out—one for the parish church, and one each for the above four chapels. Copies were stated to have been seen affixed on the outer doors of the parish church and of St. James's and St. Peter's, and the two dissenting chapels on the Sundays, Oct. 31 and Nov. 7, 1852.

The meeting was held (Nov. 8, 1852), when it was determined that the provisions of the act, so far as they relate to lighting, should be adopted in the said district; and twelve inspectors were appointed (sect. 8), and £250 resolved as the money to be raised in the succeeding year for the purposes of the act (sect. 9).

Notice of the adoption of the act by the meeting, of the amount to be raised, and the number of inspectors elected, signed by the churchwardens (s. 15), was affixed on the doors of the parish church, and of St. James's and St. Peter's chapels, on Sunday, Jan. 2, 1853; and other copies of the notice, prepared and signed for affixing on the doors of the other chapels in the parish. The affidavits were silent as to the affixing copies of this notice on the doors of the two dissenting chapels.

Three of the inspectors appointed became disqualified from acting; and at a meeting of the inspectors, July 6, 1853, when five attended, it was resolved that the overseers of Warblington should be required to pay to the treasurer (ss. 32, 35) £150 out of the amount authorised to be raised during the year. An order to that effect was accordingly then drawn up and signed, and served on the overseers. At a meeting of the inspectors, Oct. 10, 1853, it was resolved that the above order on the overseers should be enforced; whereupon a summons was taken out (Oct. 21), and duly served. In pursuance thereof the treasurer and overseers appeared respectively by their several attorneys before the justices on Oct. 25. As to what took place at the hearing, the following was stated in the affidavit:—"That said complaint was heard in part only on the said Oct. 25, and that the further hearing thereof was adjourned to Nov. 8, and was then resumed and concluded before said two justices, and that the said justices, at such conclusion of the said hearing, refused to issue their warrant for levying the said £150, which the said overseers of the parish of Warblington were directed to levy, collect, and pay to the said order, and which remained wholly unpaid as aforesaid."

The delay in making the order of July 6 was accounted for from the unwillingness of the inspectors to raise the money until actually wanted, and part only was called for, as it was hoped that would be sufficient.

No affidavits were filed in answer to those in support of the rule.

Mr. Atherton and Mr. Cowling showed cause. The affidavits do not show what took place before the justices; and it is consistent with what appears that none of the facts now shown to the court were proved at the hearing. This court will not interfere. The 11th and 12th Vict., c. 44, s. 5, requires an affidavit of the facts to be stated to the court—"in all cases where justices shall refuse to do any act relating to their duties, it shall be lawful to apply to this court, on an affidavit of the facts, for a rule to show cause why such act should not be done." The court ought to be informed what circumstances were brought before the justices.

Lord Campbell: Do you go so far as to contend that all the arguments on both sides before the justices ought to be set out on the affidavits? This is not a penal proceeding against the justices. We know that they declined to issue a distress-warrant, and we are asked to order them to do it. The affidavits seem to show us sufficient for that purpose.

Mr. Atherton: The power of the court under the section is discretionary, and this case does not call for the interposition of this court. When the justices entertain a doubt as to the law, this court will interfere, but not where the only doubt arises upon the facts; and here the affidavits do not show the grounds why the justices refused to issue their warrant. They merely state that the complaint was heard, and that the justices refused to grant the distress-warrant.

Lord Campbell: We have repeatedly granted similar rules, where the justices have heard the case, and declined to grant a distress-warrant.

Mr. Atherton: The notices of the adoption of the act by the meeting ought to have been affixed on the doors of the dissenting chapels, as well as the others. The affidavits are silent as to this, although they show that notices of the requisition to call the meeting were so affixed. The 3rd and 4th Will. IV., c. 90, s. 15, enacts "that notice of the adoption of the act, or any part of it, shall be forthwith given, by affixing a notice of the same to the principal door of every church and chapel within the parish, or in the usual place of affixing notices relating to the parochial affairs of such parish." It is true that there is nothing in the act which expressly says that the word chapel shall include dissenting meeting-houses; but that is its popular signification.

By the Court: This objection is not tenable.

Mr. Atherton: The notices were not fixed within the proper time. The 15th sect. requires the notice to be *forthwith* given. Here the act was adopted on Nov. 8, 1852, and the notice of the adoption was not given until Jan. 2, 1853. This was too late.—(*Ex parte* Lowe, 3 D. and L. 737.

The other side was not called upon.

Lord Campbell: Not the slightest objection has been brought forward to which we ought to give effect. The proceedings appear to me to have been perfectly regular, and under the act of Parliament. It is said that the justices have heard and decided the case, and that we ought not to interfere; but all that appears is, that they have refused to issue their warrant. If such a refusal were a conclusive bar, it would be in the power of the justices to repeal the act of Parliament. This is not like a case which the quarter sessions may have decided, and with which, whether wrongly or rightly decided, we have no power to interfere. Then it was said that the affidavits did not show what took place before the justices. It is unnecessary to set out all that took place; and it is sufficient if enough is shown to satisfy us that the justices ought to have issued their warrant, and that they have declined to do so; and that may be done by showing us that the order of the inspectors was a valid proceeding, and according to law, and that it ought to be enforced.

Mr. Justice Coleridge: If there was any ground for impeaching these proceedings, that would have been stated, most probably, in affidavits by the other side. I am satisfied that there was no reasonable or serious objection to these proceedings. It is presumable that the justices thought the matter too doubtful for them to act upon; and it is exactly a case contemplated by 11 and 12 Vict., c. 44, s. 5. All that we do by our rule is, to put the matter in such a shape that, if there is any solid objection to what is to be done, it may be considered before the justices. If the warrant cannot be sustained in point of law, the parties who set the justices in motion will be liable; whereas, if we cannot grant this rule, the prosecutors will be without remedy.

Mr. Justice Erle: I am of opinion that no ground has been shown for opposing this rule. If the affidavits had said nothing whatever as to what took place before the justices, perhaps that might be a ground for opposing the rule. As to the objection that the notice of adoption was not given forthwith, and therefore that all the proceedings of the inspectors were void, I just throw out that it seems to me, that in statutes like this, in which it is indicated that certain things are to be done forthwith, the provision falls within the class of directory, rather than that of imperative, provisions.

Rule absolute, with costs against the overseers.—*Law Times.*

Miscellaneous News.

CITY OF LONDON COURT OF SEWERS.

Guildhall, Tuesday, Feb. 14, 1854.

DR. LETHEBY'S REPORT.

A court was held for the despatch of public business. Mr. Deputy Peacock was unanimously elected chairman for the ensuing twelvemonth.

QUALITY OF GAS SUPPLIED TO THE CITY.

Mr. Daw, the principal clerk, read the following report:—

"To the honourable commissioners of sewers for the city of London.

"We, whose names are hereunto set, your committee on general purposes, to whom, on the 17th of January last, it was referred to consider the letter of Mr. Leslie, dated Jan. 16, referring to a statement made by Dr. Letheby to your honourable court on Jan. 10, 'that he had found 21 grains of oil of vitriol in 100 cubic feet of gas,' and drawing the attention of your court to his patent process for purifying gas, do certify that we have been attended by Mr. Leslie, and have heard him at length upon the subject; and he has stated his readiness to submit his plan to be tested by any experiments that may be suggested; and we, being of opinion that the question of the purity of gas is of great public importance, and that it is most desirable that steps should be taken to procure, by a regulated system of experiments, accurate information on this matter, we recommend that you should apply to Dr. Letheby to make such experiments and to test the qualities of the gas from the various companies that supply the City of London, with a view to such future proceedings to promote the purification of that article of general use as may seem expedient. All which we submit to your honourable court.—Dated this 10th day of February, 1854. (Signed) "W. A. Peacock.
T. Pewtress.
J. Arnold."

The report was ordered to be received; and also Dr. Letheby's report on the power and quality of the gas supplied by the Great Central Company, which was as follows:—

"To the honourable commissioners of sewers for the city of London.

"Gentlemen,—I have the honour to present my quarterly report on the illuminating power and chemical quality of the gas supplied to the City of London by the Great Central Company.

"During the last three months the average illuminating power of the gas has been equal to that of 12·8 sperm candles, or 14·6 wax, each burning at the rate of 120 grains per hour.

"These results indicate that the power of the gas has been nearly 22 per cent. greater than that required by the act of Parliament.

"The chemical quality of the gas has been of average description. By this I mean that the gas has not contained more bisulphuret of carbon, ammonia, tarry matter, or sulphuretted hydrogen, than that of other companies; in fact, it is generally more free from two of these impurities, namely, ammonia and tarry matter, than that furnished by some of the metropolitan companies. It is my duty to say that during the first week of the present year, while the frost was very severe, the gas was foul from the presence of sulphuretted hydrogen; and I am informed that this was occasioned by an unforeseen circumstance, over which the workmen at the gas-house had no immediate control. Since that time the gas has been remarkably free from this impurity.

"In closing my reports of the year I take the opportunity of placing before you the general results of my four quarterly investigations.

"During the year which has just expired I have made 381 photometrical experiments on the illuminating power of the gas supplied by this company; and I have found that the average power has been equal to that of 13·4 sperm candles or 15 wax, each consuming the standard quantity of 120 grains per hour. This shows that the illuminating power of the gas has been highly satisfactory, for it has exceeded the standard of the act of Parliament by exactly 25 per cent.; and if I have adopted the means which are usually employed for

estimating the light-giving power of coal gas, the excess of its illuminating over that standard would have amounted to nearly 67 per cent.

"It is necessary that I should say a word or two in explanation of this point. By referring to the first report which I had the honour of presenting to you, it will be seen that I stated the mean illuminating power of the gas was equal to 17 standard wax candles, or 14·4 sperm. These results were obtained in the usual manner; but I soon discovered that they did not fairly represent the facts of the case; and I, therefore, adopted a more rigorous method of conducting my experiments. That method was fully described in my second report, and it has been employed in all my subsequent investigations. The result has been that it has reduced the illuminating value of the gas by exactly one-fourth part. I mention this circumstance in order that the discrepancies which may have been noticed in the reports lately furnished by myself and others may be in some measure explained. It is also due to the company to state that the illuminating power of their gas has been increased by about 11·7 per cent. since I took office; for at that time it was equal to 17 standard wax candles, and now it is equal to 20, understanding that in both cases the old and new mode of testing is referred to.

"I cannot conclude this report without congratulating your honourable court on the fact that the Corporation of London has been first in directing public attention to one of the most important sanitary and commercial questions of the present day—namely, that which affects the quality and quantity of the gas which is so largely supplied to almost every town in the kingdom. In this metropolis alone I believe that nearly four thousand millions of cubic feet of coal gas are annually consumed, and of this about five hundred millions are supplied to the City. Now, if it be remembered that scarcely half a century has passed away since gas was first employed as an illuminating agent, it will readily be imagined that its various applications and uses have not yet received their fullest development. In point of fact, it is manifest, from a paper which was laid before the House of Commons by Mr. Hedley, in 1837, that since that time the consumption of gas in this metropolis alone has been nearly trebled, and we may reasonably expect that a still higher rate of increase will be manifested in the course of the next twenty years. Is it not, therefore, a matter of the gravest importance to the public that some supervision should be exercised over both the quantity and quality of a material the due supply of which has become almost a necessary element of life? Up to the present time, however, no controlling influence whatever has been brought to bear on the numerous companies that are engaged in the manufacture and distribution of coal gas; and the consequence is that each company adopts that system of manufacture which happens to be most convenient, or to yield the most profitable results, irrespective of the effects which the distribution of foul gas has on the health and property of those to whom it is supplied. I have already informed you that coal gas is liable to be contaminated with one or more of four impurities—namely, ammonia, tarry matter, bisulphuret of carbon, and sulphuretted hydrogen. The first of these acts corrosively on brass and copper fittings, and is also the means of holding in suspension a most intolerably fetid tar, which renders the soil of this metropolis so offensive to our sight and smell. The other compounds are, perhaps, still more objectionable, from the circumstance of their being the source of a highly corrosive compound—oil of vitriol. In more than one instance I have obtained as much as 21 grains of sulphuric acid from 100 cubic feet of coal gas; but, if we were to set down the average at no more than 15 grains of acid to every 100 cubic feet, the quantity of vitriolic acid furnished to the atmosphere of this metropolis would amount to 600,000,000 of grains, or nearly 86,000 lb. (avoirdupoise) annually. A large portion of this would doubtless be neutralised by the ammonia of the gas and by that of decomposing animal substances; but much of it would also remain in a free state, and be the source of incalculable mischief. I believe that science can furnish a remedy for this evil, and the public ought not to rest satisfied until they are assured that the powers of science had been appealed to, and that they possess some guarantee that health and property are not to be endangered by a material in which they have so large an interest. It may be truly said, and said with confidence, that in the use of coal gas we have either the greatest curse or the greatest boon of the nineteenth century; and it rests with those who have authority in the matter to make it one or the other.

"I have the honour to remain, your obedient servant,

"HY. LETHEBY, M.B.,

Professor of Chemistry, &c., in the London Hospital.

"*London Hospital, Feb.* 11, 1854."

THE MARYLEBONE VESTRY AND THE IMPERIAL GAS AMENDMENT BILL.

At a numerously attended meeting of the Vestry of St. Marylebone, held at the Court-house, St. Marylebone, on Saturday, Feb. 11—JAMES BELL, Esq., M.P., in the chair—Mr. W. E. GREENWELL, the vestry clerk, brought up and read the following report from a committee appointed as to the bill brought into Parliament by the Imperial Gas Company:—

"*St. Marylebone, Feb.* 10, 1854.

"At a committee appointed to consider the bill brought into Parliament by the Imperial Gas Company—Present, Mr. Clement George in the chair, Messrs. James Bell, M.P., Wingfield, Williams—your committee report—

"That the proposed bill repeals the present acts, and reincorporates the company, extending the provisions of the general acts relating to gas companies to the Imperial Company, and increasing their capital from £650,000 to £1,300,000, and enabling the company to borrow the further sum of £433,000. The bill contains a clause not to prejudice, diminish, alter, or take away any of the rights, powers, privileges, or authorities of the vestry.

"Your committee have communicated with Sir Benjamin Hall, M.P., as to the insertion of further clauses to benefit the parish and the public; and after considering the result of certain proposals made by Sir Benjamin Hall, at the suggestion of your committee, and conferring with Mr. Henry, the secretary of the company, thereon, they find that the company are willing to accede to the insertion of clauses in their bill for the following objects, viz.:—that all the gas supplied by the company shall be of such quality as to produce—from an argand burner having 15 holes and a 7-inch chimney, and consuming 5 cubic feet of gas per hour—a minimum light equal in intensity to the light produced by 12 wax candles of 6 to the pound, burning 120 grains per hour; and that it shall be lawful for the vestry at any time, and from time to time, to appoint a practical chemist, or other competent person, to test the quality of the gas supplied by the company. The company will also consent to the principle that a succeeding tenant shall not be charged with the arrears of gas rates of his predecessor; and that a clause shall be inserted in their bill, that upon notice being given by the occupier of premises, their gas shall be supplied upon the usual terms without payment of the arrears of a former occupier, provided there shall be no collusion between the parties.

"Your committee recommend that the foregoing arrangements should be embodied by clauses to be agreed upon in the proposed bill.

(Signed) "CLEMENT GEORGE, Chairman."

Mr. CLEMENT GEORGE said he begged, as chairman of the committee, to move that the report just read be received and adopted. It would be seen from the report that the parish would obtain advantages in this new bill of the Imperial Company which they did not now possess. Although it might be that they would not have greater competition in the article of gas than they had at present, actually, still he thought that the points gained in the new bill would be almost tantamount to having the advantages of competition. One of the points to which they turned their attention was the difference in the character and mode of supply given by the Imperial Company in that district as compared with other districts where that company also lighted. It was at first contemplated by the committee that they should oppose the bill, and call upon Parliament in committee to give them what they asked; but, having taken the counsel of the very able member for that borough, Sir B. Hall, he thought they might, if they opposed the bill, obtain less than by an amicable arrangement with the company. They had an interview with the secretary of the company, Mr. Alexander Henry, and that gentleman, on the part of the company, did not object to a clause binding the Imperial Gas Company, similar to that which had been introduced into the bill of the Great Central Company in the City, namely, giving the power to the vestry to appoint an inspector, a scientific man, to test the quality of the gas. It was also to be remarked, that not only was this clause to apply to the parish of Marylebone, but it would also apply to the adjoining parishes of St. Pancras and Paddington. This had been effected through the instrumentality of Sir Benjamin Hall. There were some points disputed between the committee and the company. The first was the charge made in that district for the service-pipes. The argument against that was, that if they had a large tenantry like the gas companies supplying the City, they would be able to do so; but, having 1000 miles of gas mains running over a comparatively profitless district, they were compelled to charge for service-pipes. Another point fought by the committee was the cost thrown upon consumers of gas for meters. The answer was that, if the company were to supply meters, it would cost them an outlay of £50,000, and then that it would not give such satisfaction to the gas consumers as to permit them to buy their own meters; all the company requiring was to test their accuracy. The committee were at first disposed that unless these modifications, in accordance with their wishes, were complied with, that they should draw up petitions and oppose the bill. Mr. Henry said he would rather abandon the bill altogether than fight the points in committee; he, however, assented to a guarantee upon that point which had long been a matter of complaint, namely, the practice of compelling a succeeding tenant to pay for the arrears of gas of a preceding tenant before he was allowed a supply. The committee consented to the words, "provided there shall be no collusion," because there might be instances where such a proceeding should take place, and it was only fair that the company should be protected against fraud. It was also an important advantage obtained that they were to have a supply of gas to every argand burner consuming 5 cubic feet of gas per hour, amounting, at least, to the light of 12 wax candles of 6 in the pound, and that they should have the power of appointing an inspector to test the quality as well as the quantity of the gas supplied. He (Mr. George) believed that such an amount of illuminating power in the gas to be supplied after this bill passed would be at least an increase of 25 per cent. on the present illuminating power of the gas supplied. He felt bound to state that Mr. Henry, on the part of the Imperial Company, met the committee in the most fair and liberal spirit, and at once acquiesced in their proposals to have clauses inserted in the new bill, with the exception of the two points to which he had referred, and which he (Mr. George) certainly thought some good arguments were shown against. Under all the circumstances, it was felt that if the vestry incurred the expense of employing counsel, and opposing the bill in committee, they might not get greater advantages than those offered voluntarily by the company. (Hear, hear.)

Mr. GEORGE WILLIAMS seconded the adoption of the report, and thought it was a matter of congratulation to the parish, and especially to the gas consumers, that such advantages were likely to be gained. It certainly had long been felt as a very great hardship that incoming tenants of premises should have to pay arrears of former tenants. Mr. Henry very properly raised an objection to the alteration without some proviso in the clause for the protection of the company from collusion. He showed that a tenant might owe a considerable amount of arrears of gas, and then might go out and put his foreman, or any other of his employees, into the shop, or place of business, and thus defraud the company of the payment for the gas they had supplied. It was that which suggested the words, "where no collusion shall have taken place."

Mr. HODGES said he should support the adoption of the report, because it appeared that the clauses to which it referred were all they were likely to get, even supposing they went to Parliament and opposed the bill; and of course, if the company withdrew their bill,

then the parish could get no benefit at all. He, therefore, should vote for the report; but, at the same time, he did think that the committee ought not to have given way in the matter of meters and service-pipes. It was a general impression that where people burnt by meter, the company took care that they were not losers by the contract. There was a practice that all meters should, before they were put up, be taken to the company's works for the purpose of testing. What test was applied, he believed, there were very few of the consumers knew anything about, and he could not say, when the meters were retained after testing, that they were above all suspicion. He did think it was somewhat suspicious that the meters should be taken away to be regulated by the company; and he thought that, at least, as well as having power to appoint an inspector to test the quality of the gas, that they should also have insisted on having an inspector to inspect the accuracy of the meters. Again, with respect to the service-pipes, he did not see that the number of miles of mains which the Imperial Company had, was any argument why, when the company were called on to supply gas, they should not supply the service to the premises. The reason why the service was not given in Marylebone without charge was that they had not the advantage of competition. In those districts where the Imperial Company had other companies to compete with, they never made any charge for service, and why should they do so in Marylebone? What right had the consumers to pay the Imperial Company for their supply of gas, and also give them £50,000 as a bonus for laying it on. He (Mr. Hodges) believed that by such proceeding the Imperial Company did a great injury to itself, as there were thousands of persons who would have gas laid on to their private dwellings, but they would not pay for laying on the service.

The resolution adopting the report was then put, and carried unanimously.

European Gas Company.—At the usual half-yearly meeting of the proprietors of this company, held on the 16th ultimo, a report on the operations of the nine months ending Dec. 31 last, was presented. The report described an improvement in the extent of the business, and also stated that the accounts, so far as ascertained, fully justified the directors in paying a dividend of 10s. per share, notwithstanding the increased price of coals and freight. The report was unanimously adopted.

REPORT OF THE SALFORD GAS COMMITTEE FOR THE YEAR ENDING JUNE 30, 1853.

TO THE COUNCIL OF THE BOROUGH OF SALFORD.

Gentlemen,—Your committee, in presenting their annual report, have the satisfaction of announcing the continued increase in the consumption of gas, but more especially the marked improvement which has taken place in the amount actually received for each 1000 cubic feet of gas manufactured.

The accounts of your committee are made up to Aug. 31 last (instead of as heretofore to June 30, in order that the termination of the financial year of each department of the corporation might be the same), and, consequently, embrace a period fourteen months; but as a comparison of the business of the works for the year ending June 30, 1853, with the preceding year, will better show the relative increase in the consumption of gas, and in the rental, they submit a few details respecting both periods.

The total quantity of gas manufactured during the fourteen months ending Aug. 31, 1853, was 101,382,070 cubic feet; the quantity of cannel carbonised being 10,065 tons 4 cwt. 2 qrs. The amount of money receivable being £20,713. 11s. 9d.

The quantity of gas manufactured during the year ending June 30, 1853, was, 93,089,370 cubic foot, and the money receivable for it, £18,943. 17s. 6½d.; the quantity of cannel used, 9286 tons 4 cwt. 2 qrs.; the increase over the preceding year in the quantity of gas made being 5,536,700 cubic feet, and in the amount received, £1902. 3s. 10½d., although the increased quantity is below the increase of the year ending June 30, 1851, over 1850, and the year 1852 over 1851; yet the money increase is considerably greater than in either of those two years, and is the greatest increase in the receipts for gas, in any one year, since the works were established.

Your committee are desirous, as an act of justice to their present manager, of correcting the statements in the two last reports of the gas committee, as to the quantity of gas produced from each ton of cannel. In the report dated Oct. 29, 1851, the quantity of cannel carbonised is stated to be 6873 tons 10 cwt.; the gas made, 79,996,500 cubic feet; and the average quantity of gas produced from each ton of cannel, 11,637 cubic feet: the fact being that the actual quantity of cannel consumed was 7540 tons 1 cwt. 1 qr., and the gas produced from each ton, 10,608 cubic feet. In the report dated Oct. 30, 1852, the quantity of cannel carbonised is stated to be 7625 tons 18 cwt.; the gas made, 87,552,600 cubic feet; and the average quantity of gas produced from each ton of cannel, 11,480 cubic feet: the fact being that 8662 tons and 2 qrs. were used, and the quantity of gas produced from each ton, 10,100. Mr. Stelfox, the late manager, explains this discrepancy by stating that he had followed the practice of previous managers, and calculated the quantity of cannel carbonised from an assumed weight of each barrowful of cannel used by the stokers daily, and not from the quantity of cannel actually received at the works, which would have been, in the opinion of your committee, and their present manager, Mr. Brothers, the correct mode of making the calculations; and they regret that the committees should have been thus led into error, as, although it does not affect in the slightest degree the statements of the profits, and of the accounts of the establishment, they nevertheless cannot but see that it might lead, at a future time, to an unfavourable impression as to the skill in the manufacture of gas, not only of their present or subsequent managers of the works under their control, but of gas managers generally, and they therefore embrace the earliest opportunity of correcting it.

Your committee having had their attention drawn to the condition of the main pipes throughout the districts supplied by them, and being convinced that they were, in many cases, quite inadequate to meet the requirements of the public and the consumers of gas, at once commenced the work of remedying the defects of an inefficient supply, and removing all cause of complaint, by substituting mains of a much larger diameter in the leading thoroughfares of the town, the result of which has been, that your committee are now deriving an increased revenue from those districts.

Your committee having received many applications for gas from parties residing along the Eccles Old-road, have laid the greater part of the 8-inch pipes taken up, in consequence of the substitution of larger mains in Salford, in that road, from Weaste-lane to within a short distance of Gilda-brook, the division between Pendleton and Eccles; and as the inhabitants of Eccles and Patricroft have expressed themselves anxious to be supplied with gas by your committee, and as they have received written guarantees from owners of works and mills in Patricroft to take upwards of two thousand lights, they have made the necessary preparations for carrying the mains to those two places, and they doubt not that it will be found a profitable investment.

Your committee have also had a number of applications for a supply of gas from the inhabitants of the townships of Swinton and Worsley, and those applications will require the early attention of their successors.

Your committee have, during the past year, erected six ovens, to contain thirty-six retorts, of which the foundations were laid last year, and have thus increased their producing power from 123 to 159 retorts; and, as the present condensers have become too small to pass the gas which will be required in the forthcoming winter, they are now erecting a set of condensers on a principle superior, in cooling properties, to the present ones, which they fully expect will be at work in the course of a few weeks. The old wash-vessel having been removed frem the site it formerly occupied, a tar-well, capable of containing 5000 gallons, has been constructed in its place, and the new condensers will be erected upon it. The two station meters having been so connected that the larger one, the last erected, could only be worked when the telescope gasholder was in operation (which is only in the depth of winter), on account of the extra pressure it caused upon the retorts, &c., as well as upon the town, the connections have been altered so that either or both meters can be worked when any of the gasholders are in use, thus rendering the measuring capabilities very much superior to what they were.

The new purifiers were got fully at work in December last, and cost £503. 7s., exclusive of alterations in the purifier house, which is £27. 8s. 6d. more than stated in the last report.

Your committee have, during the past year, been called upon, for the first time, to pay the township rates on the gas works; these extra charges have made an addition to their expenditure of £714. 10s. 1d.

In the early part of last spring, your committee made contracts for the delivery on their works, in three years, of 24,000 tons of Wigan cannel; and, though the increased price which they were compelled to give has caused a considerable increase in this item of expenditure, yet had they deferred making those contracts, even for a few months, they would have had to pay about £4000 more for the quantity which they have contracted for.

The price charged for the meters supplied to the consumers has been reduced by your committee, since May last, 16 per cent., which has caused a diminution of profit under that head, as shown in the accounts. The subject of lending meters to small consumers, and charging a rental thereon, would undoubtedly cause an increased consumption in small houses, and your committee hope their successors may be able to devise a plan whereby this arrangement may be carried out, as they believe it would prove equally advantageous to the gas committee and the consumer.

Your committee have paid, during the past year, £3008 to the Finance Committee, on account of the sinking fund account, and £3008 to the Improvement Committee, on account of the improvement fund, being the net amount of the profits of the gas works for the year ending June 30, 1852; they have also paid £2397. 15s. 8d. to the Finance Committee, as interest after the rate of 5 per cent. on the invested capital of the works. The gross profit for the fourteen months is £10,651. 13s. 2½d., after paying for the new purifiers, extension of retort-house, iron mains, retort-bed, tar-well, &c., and also the deduction of £1058. 1s. 3d. for wear and tear; and, after paying the above amount of £2397. 15s. 8d. to the Finance Committee for interest, the net profit is £8253. 17s. 6½d., which, exclusive of the above-named extensions, taking the quantity of gas consumed as the datum, is £7578. 13s. for the year ending June 30, 1853, being an increase of £1560. 14s. 4d., as compared with the previous year.

* * * * * *

The following statement will show, in a simple and concise manner, the progress of the works for the last four years:—

Year ending June 30	Gross Amnt. of Gas Rental.	Price of Gas.	Increase over preceding Year.	Deduction for Wear & Tear	Deduction for Interest on Invested Capital.	Amount of clear Net Profits.
	£ s. d.		£ s. d.	£ s. d.	£ s. d.	£ s. d.
1850	14,463 15 8½	5s. to 4s. 6d. per 1000 cubic feet.	464 7 10½	919 6 0	1,838 12 1	5,507 15 0
1851	15,884 2 6		1,420 6 9½	928 13 1	1,857 6 2	6,989 16 4½
1852	17,041 13 8		1,157 11 2	1,042 10 0	2,085 0 5	6,017 18 8
1853	18,943 17 6½		1,902 8 10½	1,058 1 3	2,397 15 8	7,578 13 0

Your committee, in conclusion, have to express their great satisfaction with the skilful and satisfactory manner in which Mr. Horatio Brothers has conducted the works since his appointment as manager, on Nov. 1 last.

Thomas Chadwick, Chairman.

Gas Works, Salford, Oct. 31, 1853.

RECEIPTS AND EXPENDITURE OF THE SALFORD GAS COMMITTEE, FROM JUNE 30, 1852, TO AUGUST 31, 1853.

RECEIPTS.

To balances at June 30, 1852, viz.:—			
Balance in the Bank	£ 3,088 18 5		
Do. on hand	85 8 10½		
	3,174 7 3½		
Less balance of sums owing by the committee	536 5 9		
		£ 2,638 1 6½	
Gas rents received	20,747 6 3½		
Gas rents outstanding June 30, 1852	2,179 18 4		
	22,927 4 7½		
Less gas rents outstanding Aug. 31, 1823	1,888 10 9½		
		£1,038 13 10	
Coke, Gas Tar, Ammoniacal Liquor, &c., sold.			
Coke	847 13 9		
Gas tar	616 14 10½		
Ammoniacal liquor	274 15 0		
Cinders	3 0 0		
		1,742 3 7½	
Meters and Meter Boxes.			
Meters and meter boxes		697 13 0	
Sundries.			
Old iron	120 14 2		
Burners	0 5 0½		
Iron retorts (old)	2 16 1		
Fines, summonses, &c.	0 6 0		
Unclaimed deposits	1 8 0		
		125 9 3½	
Interest.			
Interest allowed by bankers	89 2 9		
Less commission	42 5 7		
		46 17 2	
Balance of interest on mains in the out-townships		104 14 4	
		£26,393 12 9½	

EXPENDITURE.

Salaries.			
Manager (late)....James Stelfox, 4½ months	£ 93 15 0		
Manager (present)....Horatio Brothers, 10 months	133 6 8		
Collector.....Samuel Long, 14 months	237 2 5		
Office clerk (late)....John Storer, 7 mos. 3 wks.	63 19 8		
Office clerk (present)..J. Wm. Betteney, 6 m. 2 w.	42 15 0		
Inspector of meters and fittings.....Wm. M'Farlane, 14 months	81 4 0		
Inspectors of meters	85 6 0		
Lodge-keepers	73 12 0		
		£ 811 0 9	
Workmen's Wages.			
Gas men	1,515 9 6		
Bricklayers, &c., at retorts	150 5 3		
Labourers at the works	442 15 7		
Labourers at service-pipes	189 2 5		
Labourers at lamp-pipes	21 14 5		
		2,319 7 1	
Interest, Chief Rents, &c.			
Property tax	£212 6 0		
Less received from Le Gendre N. Starkie	8 5 8		
Less received from finance committee	72 0 10		
	80 6 6		
	131 19 6		
The finance committee, one year's interest on the invested capital	2,397 15 8		
Chief rents	284 1 8		
Less received from Townhall, &c., committee	125 10 0		
	158 11 8		
The improvement committee, proportion of profits to June 30, 1852	3,008 0 0		
The finance committee (sinking fund account), proportion of profits to June 30, 1852	3,008 0 0		
		8,704 6 10	
Rates and taxes		714 10 1	
Cannel and Lime.			
Cannel	5,407 19 2		
Lime	181 19 6		
		5,589 18 8	
Meters and Meter Boxes.			
Meters and meter boxes		696 6 9	
Main Pipes, Excavating, &c.			
Iron mains and service-pipes in Salford	1,744 16 5		
Iron mains and service-pipes in Broughton	195 3 4		
		1,939 19 9	
Iron Castings and Smiths' Work.			
Iron castings for works	11 1 3½		
Implements	103 10 3		
		114 11 6½	
Clay Retorts, Fire Bricks, &c.			
Clay retorts	330 15 10		
Fire bricks and fire clay	206 18 2		
		537 14 0	
New Purifiers and House.			
New purifiers and house		530 13 0	
Extension of Retort House.			
Extension of Retort-house		424 7 9	
Cement, Repairs of Pipes and Streets.			
Cement	24 0 5		
Repairs of water works pipes	8 10 4		
Repairs of streets	226 11 11		
		259 2 8	
Models and Patterns.			
Models and patterns		4 5 5½	
Miscellaneous Expenses.			
Oil, paint, and painting	25 19 9		
Repairs of buildings	8 1 6		
Expenses on manager's house	13 14 9		
Casual expenses on works	187 10 7		
Water rent	50 0 0		
Office expenses	73 9 3		
Furniture for offices	4 13 3		
Repairs of telescope gasholder	2 0 0		
Alteration of offices	14 15 3½		
New gasholder and connections	16 0 0		
Retort bed	7 10 0		
Rent of office at Townhall	13 6 8		
		417 1 0½	
Balances at Aug. 31, 1853, viz.:—			
Balance in the Bank	3,128 13 7		
Balance of cash on hand	101 1 7½		
Balance of sums owing to the committee, viz.:—			
Owing to the committee	£2,736 12 10½		
Owing by the committee	2,636 0 8		
	100 12 2½		
		3,300 7 5	
		£26,393 12 9½	

SALFORD GAS COMMITTEE STOCK ACCOUNT, AUGUST 31, 1853.

ENGAGEMENTS.

Sundry debts owing by the committee	£ 2,636 0 8
Excess of assets	49,378 11 4½
	£52,014 12 0½

PERMANENT ASSETS.

Gas Works, as per last report	£42,322 11 11	
Deduct allowance for deterioration for the year	1,058 1 3	
		41,264 10 8
Add outlay in the fourteen months ending Aug. 31, 1853:—		
Iron main and service pipes	1,939 19 9	
New purifiers and house	530 15 0	
Extension of retort-house	424 7 9	
		2,895 2 6

FLOATING ASSETS.

Gas rents outstanding Aug. 31, 1853	1,888 10 9½	
Sundry debts owing to the committee	981 13 0½	
Sundry materials on hand	1,754 19 10	
Balance in the Bank, Aug. 31, 1853	3,128 13 7	
Balance of cash on hand, ditto	101 1 7½	
		7,854 18 10½
		£52,014 12 0½

SYDENHAM GAS AND COKE COMPANY.

An extraordinary general meeting of the Shareholders of the Sydenham Gas and Coke Company was held at the Bridge-house Hotel, Southwark, on Friday, Feb. 17, for the following purposes:—

1. To receive the directors' report and the company's balance-sheet.
2. To remove Mr. Stears from the office of one of the directors of the company.
3. To confirm the acts and proceedings of the directors since they ceased to summon Mr. Stears to attend the meetings of the board.
4. To empower the directors to borrow the further sum of £2000 under the authority of the deed of settlement, upon the company's bonds, or debentures, or a mortgage, at such rate of interest as may be agreed upon with the lenders.
5. To receive the recommendation of the directors for the formation

of a new company, to be called "The Auxiliary Sydenham Gas and Coke Company."

"REPORT OF THE DIRECTORS.

"The proprietors will not be surprised at having received notice of the present extraordinary general meeting, to receive from the directors a report of the changes which have taken place among the executive officers of the company, and of the particulars which have led to those changes; also, a report of the financial state of the affairs of the company, and of its future prospects.

"The prospectus issued of a newly projected gas company, entitled 'The Crystal Palace District Gas Company,' naturally occasioned some uneasiness to your directors; and especially so, because it was scarcely attempted to be denied that the promoters of this new company were one of their own board—namely, Mr. Stears, who was also the company's engineer, and Mr. Downes, who had not been removed from his office of solicitor to your company, and who was also one of the trustees.

"At a meeting which your directors had with Mr. Stears, he admitted the fact to be as above stated, and made a proposal for the purchase of the shares of your company. At this time your directors ascertained that Mr. Stears had entered into a contract for laying down mains which the directors had not authorised, and had actually pledged the credit of the company for the expense of this undertaking, amounting to several hundred pounds. They felt it incumbent on them to repudiate this agreement; and having in the mean time considered the proposal of Mr. Stears for the purchase of the shares of your company, and feeling the impossibility of making terms with him of such a nature as should justify your directors in recommending them to their fellow-proprietors for adoption (even if legal difficulties did not prevent such a sale, and which your directors were assured are insuperable), they resolved to remove Mr. Stears from the office of engineer, and so be relieved from the painful responsibility of having for their principal executive officer a person in whom they and you could no longer repose any confidence.

"Simultaneously with this removal, the prospectus of the newly projected company was issued, and it contained the names of Mr. Stears as engineer, and of Mr. Downes as secretary and solicitor. It appeared to the other members of the board that the duties of a director of your company were so inconsistent with the duties of engineer and promoter of what could only be considered as a rival gas company, that they wrote to Mr. Stears and suggested the propriety of his resigning the office of a director in your company. This, however, he declined to do. It therefore became necessary for the remaining directors to meet without giving him notice of the proceedings; and your directors confidently rely on their brother proprietors, for their approval and confirmation of their subsequent proceedings, although unavoidably carried on without Mr. Stears being summoned.

"The removal of Mr. Downes from the office of solicitor and trustee was equally necessary.

"Your directors feel assured that the proprietors will approve of the selection made of the solicitors to supply his place—Messrs. Tatham, Upton, Upton, and Johnson, of Austin-friars.

"The acting engineer, whom your directors have appointed to succeed Mr. Stears, was highly recommended to them by Mr. Goddard, of Ipswich; and the experience of his value leaves no doubt of the propriety of the selection.

"The next point to which your attention is requested, is the company's balance sheet to Sept. 30, 1853, which has been made up by a most experienced accountant, Mr. Begbie, before whom all the books and papers of the company were laid, and your directors congratulate the proprietors upon the result exhibited in that balance sheet; for when it is considered how short a period the company has yet been established, and how heavy the preliminary expenses were in proportion to the amount of capital, it is a subject of surprise to your directors that the revenue account should present a balance so favourable.

"It would have been satisfactory to your directors if they could have presented a complete balance sheet up to Christmas, but the time that has elapsed is scarcely sufficient to enable them to do so.

"There is one point in connection with this balance sheet to which your directors invite your particular attention, namely—that the measure of capital is the measure of profit, and that in proportion to the increase of the former (to satisfy the increasing demands of the neighbourhood) will be the certain increase of the latter; and this observation brings your directors to the remaining subject of consideration—namely, the future prospects of the company.

"Your directors need scarcely dwell upon the admirable position of your works, or on the extent of the levels and inclinations of the adjoining land, or on the rapid increase of the population and buildings in every direction, or on the corresponding increase in the demand for the admirable gas made at your works, of which the following extract from a letter from the secretary to the Crystal Palace Company affords a satisfactory confirmation:

"'The quality of the gas hitherto supplied to the works, and its price, are quite satisfactory to the directors, and I am to assure you, that as long as they continue so, they will be very glad to continue to take their supply from your works.'

"And here your directors cannot forbear from adverting to the disingenuous manner (to use no stronger expression) in which the projectors of the new gas company have put forth their pretensions in respect to the Crystal Palace.

"They have taken upon themselves, as well in their advertisements as in their prospectus, to state that 'an arrangement or engagement has been entered into for lighting the Crystal Palace,' thereby implying that such engagement or arrangement had been entered into on behalf of such projected company.

"The proprietors will be surprised when your directors inform them that there is not one word of truth in that statement.

"The secretary of the Crystal Palace Company acquaints your directors that they have entered into no contract with the Crystal Palace District Gas Company, and that the only arrangement for supplying the Crystal Palace is with the Sydenham Gas and Coke Company; and to the quality of the gas so supplied the above quoted testimony has been given.

"Your directors now proceed to consider the best mode of developing the capabilities of your company; and the extent to which that development may be carried is such, that those who are not well acquainted with the locality can form but an inadequate idea of it.

"There are the districts of Norwood and Penge, and the village of Beckenham; then there are the Anerley Station, the large hotel establishments at the top of Norwood-hill, the new station of the West End Crystal Palace Railway, and the station at Beckenham, about to be built. These are only some of the leading points, and no limit can be assigned to the increase of ordinary buildings and dwelling-houses.

"Your directors feel assured that the proprietors must have already anticipated, and will most cordially approve of, the proposal and recommendation now about to be made by your directors.

"The limit of further capital, imposed by the deed of settlement, is the small sum of £2000; but your directors propose to avail themselves of that sum immediately.

"Without making any alteration in the deed of settlement, and without doing any act which shall in the slightest degree affect the interests of any shareholder of your company, they propose to establish a new company, to be called the Auxiliary Sydenham Gas and Coke Company, to which they invite every shareholder to subscribe, and they feel that this invitation will be cordially responded to by the great body of the shareholders; and although it will be impossible, in the first instance, to amalgamate your company with the auxiliary company, yet your directors feel certain that the mutual interests of every shareholder in each company will be such, as at no distant period to lead to the consolidation of the two undertakings; and, in the mean time, your directors feel no difficulty in harmoniously working both companies under united management, and without giving to any dissentient shareholder ground for dissatisfaction or objection.

"P. CATOR, Chairman.

"1, *Great Guildford-street, Southwark, Feb.* 8, 1854."

BALANCE SHEET, SEPT. 30, 1853.

Dr.				*Cr.*			
To capital paid up		£10,000	0 0	By cash :—			
Creditors on Debentures		1,000	0 0	In banker's hands	£786 2 11		
Creditors, trade		1,070	12 2	Petty cash	1 0 5		
Revenue account		216	10 5			£ 787	3 4
				Debtors :—			
				Gas rents for the quarter ending Sept. 29, and arrears	421 6 11		
				For coke, &c.	84 12 9		
				W. M. Stears, for balance of working account, and gas rents received	322 13 4		
						828	13 0
				Land, works, plant, mains, services, and meters		9,484	17 2
				Stock :—			
				Pipes, tubes, bends, &c.	126 8 10		
				Coal, coke, gas, tar, &c.	103 8 4		
						229	17 2
				Office fittings		15	17 3
				Dividends paid		176	5 5
				Preliminary expenses :—			
				Law charges, printing, and stationery		764	9 3
		£12,287	2 7			£12,287	2 7

REVENUE ACCOUNT, FROM AUGUST, 1852, TO SEPT. 30, 1853.

Dr.				*Cr.*			
To coal		£805	3 8	By gas supplied to consumers :—			
Loading and wharfage		62	6 6	Sydenham	£801 3 9		
Wages		274	12 9	Norwood	661 3 6		
Lime, sand, and gravel		45	18 2			£1462	7 3
Retorts, setting, &c.	£207 12 9			Coke, tar, &c., retailed		228	8 7
Less old materials	57 16 0			Stock of coal, coke, gas, tar, lime, and ashes		103	8 4
		149	16 9				
Repairs to tools and meters		8	6 10				
Allowance to consumers		2	13 4				
		£1348	18 0				
Rent, rates, and taxes		61	1 7				
Salaries		94	0 0				
Petty expenses, stationery, postages, advertisements, &c.		73	14 2				
		228	15 9				
		1577	13 9				
Balance, being net profit, carried to balance-sheet		216	10 5				
		£1794	4 2			£1794	4 2

One o'clock, the time for holding the meeting, having arrived,

Mr. Truscott hoped the business for which they had met would be proceeded with, and that the gentlemen in conversation at the window would give the whole meeting the benefit of their observations.

Mr. Cator then took the chair, and said: The reason why I delayed taking the chair, and held a private conversation in the corner, was, that an important overture was made to the company, and one which seemed to me to be for the welfare of us all. It is most desirable that an arrangement, such as has been suggested, should be brought to a satisfactory conclusion. I hope the meeting will allow us to have a little further discussion on the points under consideration, in order that an amicable adjustment of differences may be brought about. We have been obliged to resort to advertisements of a painful nature; and I think, if we were now allowed an opportunity of having a private discussion, we would soon agree upon terms; that would lead to a harmonious working with the new company that has been started. This would be very much for the advantage of the Sydenham Company, and also for the Crystal Palace Gas Company.

Mr. Truscott: Are we now going to proceed with the business for which we met?

Mr. Cator: I am assigning a reason for the delay that has occurred.

Dr. Roberts: Not as chairman, I believe?

The Chairman: We were taking into consideration the propriety of an amalgamation with the Crystal Palace Gas Company. Now, if we could make terms with that company, we should have no occasion to establish the auxiliary gas and coke company. We look to substance, and not to outward appearances. If we can make satisfactory terms of amalgamation with a company already formed, it will be better. I think, if gentlemen will allow the private communication which was taking place at the window to continue five or ten minutes longer, we shall arrive at terms which we will submit for your adoption—terms which will be beneficial to all parties. I hope, therefore, we will be allowed some further time for negotiation.

Mr. Pocock: Cannot we do so in public discussion?

Dr. Roberts: Certain things have taken place, of a public character, which must be publicly explained, and the explanation of which no private conference or arrangement can obviate. I think it would be better to read the report of the directors, and allow a public discussion. (No, no.) It must come to that at last. There are a great many interests here concerned. If any gentlemen wish to retire from this room, let them do so. Although I do not wish to throw any obstacle in their way, yet, as being in some measure antagonistic to the proposition, I do not wish to form one of them.

Mr. Truscott: We cannot introduce any other subject than that for which we met. I do not wish to do anything offensive, but there are gentlemen here who have no right to be present. The gentleman who has just sat down, I apprehend, has no connection with the Sydenham Gas Company.

Mr. Downes: I can state that he is a member. He became a shareholder yesterday; but, the shares not having been registered in time, it may be said he cannot vote, but he has a right to be here, and to be heard.

Mr. Rouse: The gentleman came here yesterday at five o'clock, and had the unreasonableness to ask me to register more than half the shares of this company, after the office hours were over. I said I could not register his shares then. He said, "Will you do it to-morrow?" I said, "To-morrow we will be engaged, but if you leave the transfer with me, I will do so." I did not refuse to do so, but it was not my province to do so then.

Mr. Downes: I do not complain of any discourtesy on your part, Mr. Rouse.

The Chairman: Before I proceed to the business of the day, and the immediate object for which we are called together, I think it right to tell the gentlemen present that, in the opinion of my colleagues and myself, it is desirable that the object for which we met to-day should be postponed. We have received a communication from Mr. Downes on behalf of the Crystal Palace Gas Company, proposing to amalgamate that company with the Sydenham Company; and we are of opinion that such an amalgamation would be for the general welfare of both proprietary. This proposal was only made a few minutes before the time fixed for holding our general meeting, and therefore we had not had time to discuss the project. If that treaty were to be concluded, the report now about to be read, and the other propositions to be submitted to this meeting, had better be postponed. We should, if possible, endeavour to arrive at an amicable solution of all our difficulties. I therefore move that this meeting postpone the consideration of the business for which we met for five or ten minutes, to enable us to bring matters of difference to an amicable conclusion.

Mr. Downes: Gentlemen, on behalf of the parties connected with the Crystal Palace Gas Company, and likewise on behalf of more than half of your shareholders, I decidedly approve of the friendly language which has fallen from your chairman. The suggestion made is for the sake of peace, and that the interest of neither parties should suffer. I am a large shareholder, and I feel persuaded that if we adjourn for a short time, an amicable arrangement will be come to. (Hear, hear.)

Dr. Roberts: What about the charges that have been made?

Mr. Downes: They will be arranged if you only allow a few of us to step into the next room for a few moments. Will you, Mr. Cator, choose two gentlemen, and I shall choose two, to confer together? I shall take Mr. Soper with me.

Mr. Soper declined, on the ground that he was only a shareholder in the Sydenham Company, and had no interest in the other company.

Mr. Downes, solicitor to the Crystal Palace Gas Company, Mr. Geo. Pearce Pocock, and Mr. Hooper, on the part of the Crystal Palace Company; and Mr. Upton, solicitor of the Sydenham Company, Mr. Cator, and Mr. Nevins, on the part of the Sydenham Company, then withdrew to confer on the course to be adopted.

After the lapse of ten minutes, the conference returned.

The Chairman: Now, gentlemen, I am happy to say that this adjournment has not been without fruit. We have arrived at the determination that it will be for the benefit of both companies that there should be a deputation from both companies, with a view to effect an amalgamation. Then, what is to become of the meeting to-day? There are five propositions, one of which we are desirous of passing. It is for the welfare of this company, and the Crystal Palace Gas Company are equally interested in it. It is one to empower the directors to borrow the further sum of £2000 under the authority of the deed of settlement, upon the company's bonds, debentures, or a mortgage at such rate of interest as may be agreed with the lenders. As to all other matters, we have agreed that the subject be adjourned for a fortnight, so that, in the mean time, the directors of both companies may meet and arrange terms of amalgamation; we will then call a general meeting to approve of those terms. In the mean time, we propose that all other matters in the report shall remain quiet—awaiting the result of the meeting this day fortnight. If that meets with the approval of the meeting, you will pass the resolution referred to, and adjourn the consideration of all other matters. Deputations from both companies will meet, with the view of arranging the terms of amalgamation.

Mr. Truscote: In what way will this deputation be constituted?

The Chairman: The directors of the Sydenham Company will appoint two of their board to meet two gentlemen appointed by the board of the Crystal Palace Gas Company, and to those gentlemen will be committed the interests of both companies.

Mr. Rouse: Will the deputation be accompanied by the solicitors of both companies?

Mr. Upton (solicitor to the Sydenham Company): I have no objection to accompany the deputation; one of the objects of the deputation is to prevent the discussion of matters here which must be very painful, and which must tend to damage both parties.

Mr. Truscote: Well, of course we must be guided by you; but I have a strong opinion that this report should be read and passed, for it does not simply involve merely personal matters, but contains a balance-sheet, which the meeting should take into consideration.

Mr. Upton: The object of all parties is to allow everything to remain in *statu quo* that is calculated to excite discussion of subjects which might interrupt that harmony which it is most desirable to maintain pending the negotiations now set on foot.

Mr. Pocock: As a fortnight may not be required for the negotiation, if the two committees should see fit, they might allow us to be summoned in a week. There seems to be no difference between them, and a very long discussion will not be necessary. I think we may do the whole matter in a week as well as in a fortnight.

Mr. Downes: It was a question with the committee, whether a fortnight would be long enough. We thought, at one time, that a month would not be too long. Mr. Chairman and gentlemen, am I in order—may I proceed?

The Chairman: I shall be glad to hear any gentleman.

Mr. Truscote: Do you put your proposition in the shape of a resolution? At present we have none before the meeting.

Mr. Downes: I am about to do that. Mr. Chairman and gentlemen, I am sure, after the part I have taken in bringing about these negotiations—after the interest I have for the last three years taken in the Sydenham Gas Company, and the interest I now take in the other company—it must not appear extraordinary that I should be the first to hold out the olive-branch, by moving that you should be empowered to raise this £2000. I do so with the feeling that it will be adding to the prosperity of the Sydenham Company. If we act as wise and prudent men, and not as madmen, we will endeavour to bring about the amalgamation that has been shadowed forth. I am sure I am expressing the opinions of the Crystal Palace Gas Company when I say that I am desirous to see the Sydenham Company brought to the greatest possible prosperity. With that view I shall now propose the fourth resolution on this paper—"That the directors be empowered to borrow the further sum of £2000, under the authority of the deed of settlement, upon the company's bonds, or debentures, or on mortgage, at such rate of interest as may be agreed with the lenders." I shall avoid making any further comment on this or any other subject, at the present time. I shall content myself with merely proposing the resolution, feeling that I have best discharged my duty, by having shadowed out the wishes of the Crystal Palace Gas Company, that the Sydenham Company may be made as prosperous as possible.

Mr. Soper seconded the motion.

The Chairman then put the resolution, and it was carried unanimously.

Mr. Downes: Should there not be a resolution proposing the deputation before the meeting adjourned.

Mr. Hooper: It will afford me great pleasure in doing so. It appears to me perfectly clear that the two companies have common interests, and occupy common ground. This is rather a remarkable meeting, for we have a kind of publication of the bans of marriage between two parties who are children of the same parent. That in common law might be illegal; but these individuals are so ethereal and aërial in their nature, that they are not bound by common ties. They may be married, and I hope they will be married. There were some very difficult questions that might have come before this meeting. I am, however, happy to find that sufficient explanations have been entered upon between the two belligerent parties, to induce them to make not only a peace, but an advantageous union. (Hear, hear.) I shall not take up the time of the meeting, further than to express my

conviction that the union of the two companies shall set the world at defiance to snatch from them the benefit of their common object. I now move—"That the meeting do now adjourn till Friday, March 3, at one o'clock, at this place, and that the Board of Directors be authorised to depute two of their members to meet two of the directors of the Crystal Palace District Gas Company, that they together may endeavour to bring about an amalgamation of the two companies."

Mr. ROUSE: Will you supply me with a copy?

Mr. HOOPER: I will, sir.

Mr. NEVINS: I do not see why they ought not to have the power of calling the shareholders together at a much earlier period, for this is an important question, and it would be consulting the interest of both companies to submit the result of the conference to the shareholders at the earliest period.

Mr. HOOPER: I have no objection, if the meeting approve of your suggestion, to alter the resolution to suit your wishes.

Mr. UPTON: You will require a general meeting, and that meeting will require several days' notice, so that, after all, you are only allowing yourselves seven clear days for negotiation, to conform to that arrangement.

Mr. DOWNES: I quite agree with what Mr. Upton has said. It appears to me clear that there will be no difficulty in coming to a satisfactory arrangement, and it will be to the interests of both parties that the meeting be legally convened.

A SHAREHOLDER: That is not an adjournment of this meeting at all.

Dr. ROBERTS: I rise to second the proposition, for the purpose of stating a feeling I laboured under when I entered this room. Our company was started simply with the view of supplying the necessities of the Sydenham, Norwood, and Dulwich districts, and with the view of immediately amalgamating with the Sydenham Gas Company. Day after day, I have been greatly excited, and much offended with what I have seen in the papers.

Mr. DOWNES: Do not go into that question.

Mr. TRUSCOTT: If you go into anything of this, I shall get up, and claim a right to reply.

Dr. ROBERTS: Before the deputation was appointed, and before any arrangement was entered upon, I wanted to make an explanation. I have no doubt the deputation to be formed will satisfactorily explain everything. If I did feel irritated and excited when I came in, and wished to show my reasons, still I have no ill feeling. We have only one common bond of interest, and that can be best carried out by amalgamation. I beg leave to second the resolution, having full confidence that everything will be arranged satisfactorily.

Mr. TRUSCOTT: I think the number is rather slight, and that there should be three on each side. I do not wish to be included myself. I move, therefore, that three on each side be appointed.

Mr. LAURIE seconded the motion.

Mr. HOOPER: If the amendment should be thought better, I will not stand in the way of the gentlemen.

Mr. DOWNES: One word. As I feel great anxiety that this amalgamation should be brought about, I would recommend that great care should be taken as to the material of which your deputation consists.

Mr. TRUSCOTT: I think that that is very sound advice.

The resolution was then altered, so as to make the deputation consist of three on each side, and was unanimously agreed to.

Dr. ROBERTS: I beg leave to move a vote of thanks to the chairman.

Mr. DOWNES: I shall most willingly second that proposition.

The motion having been carried,

The CHAIRMAN said: I am very much gratified to think it has been thought right to give me a vote of thanks; my only object has been to secure, as far as possible, the welfare of this company, and of the neighbourhood we propose to serve. I can only, in addition, express my extreme gratification at the result of this meeting. I attended here with painful apprehensions as to the result of our meeting. We have, however, proceeded in an amicable manner, and I have no doubt that the result of the proposed negotiations will be a satisfactory settlement of all our differences. (Hear, hear.)

The meeting then adjourned.

SPECIAL MEETING OF THE SHEFFIELD CONSUMERS' GAS COMPANY.

A special meeting of the Sheffield Gas Consumers' Company was held on Thursday, the 2nd inst., in the Council-hall, for the purpose of receiving Alderman Carr's report, and to pass the directors' accounts. This was an adjournment of the half-yearly meeting held on the 5th of October last, when the report of the directors met with considerable opposition, and the company's affairs were referred to Alderman Carr, for him to investigate and report upon; the adoption of the directors' report being deferred for that purpose. The present meeting was numerously attended by shareholders. Mr. ALCOCK, the chairman of the board of directors, presided. The other directors present were Messrs. Manwaring, Milner, B. Seale, W. Crowther, S. Horrabin, W. F. Ibbotson, W. Harvey, and G. Beardshaw, also Mr. H. Vickers (one of the company's solicitors), Mr. Hedley (the company's engineer), and Alderman Carr.

Mr. CARR was received with loud applause. He said he should not occupy time by comments, but at once proceed to read the report of the investigation which he had made into the affairs of the company, and which he hoped he had made with as much fairness as possible. Having read the report, he should be happy to answer any question from the shareholders. He then read

"THE REPORT.

"On Oct. 10, 1853, I received from your chairman the following resolution:—'That all matters referred to in the directors' report be submitted to Alderman Carr, and that he be respectfully requested to report thereon.'

"From the terms of this resolution, it might appear that I should be limited in my investigation to the topics contained in the directors' report; but, on reference to the report of the meeting of shareholders held in the Townhall, on Oct. 5, 1853, I felt assured that the proprietors would not be satisfied, unless my inquiry extended to all matters discussed at that meeting. Indeed, except in one instance, and that will be referred to hereafter, the directors' report requires no comment from me, inasmuch as it consists chiefly of an enumeration of facts, to which no shareholder could reasonably object. Having, therefore, spared no pains to make myself thoroughly acquainted with every subject requiring my attention, and also called in the aid of practical men whenever I deemed it necessary, I proceed to report on the various matters requiring investigation, in the order in which they appear in the newspapers of Oct. 8, 1853.

"Passing over the directors' report, I come at once to that of Mr. Hedley, the engineer, who states, 'That the retort-house, in its capacity, is more than sufficient for four times the present business, and, with the retorts now at work, is capable of carbonising thirty tons of coals in twenty-four hours, making 285,000 cubic feet of gas per day. This will supply 12,000 lights, burning four feet per hour for six hours; and when the other part of the retort-house is completed, and the large gasholder is at work, the company will be in a position to double that amount of business.'

"This statement I find to be perfectly correct. Further, respecting the number and capabilities of the retorts, the engineer speaks favourably, and does it correctly; but of the furnaces he states—'The furnaces are badly constructed, and will, in consequence, consume much more fuel than they ought to do.' On this point it must be remembered that, previous to the engineer's coming to Sheffield, he had been engaged chiefly in London, where coals are dear, and coke not much in demand. In Sheffield, coals are usually not more than half the London price, and cokes are in constant requisition; but, had not this been the case, the things complained of would soon have been remedied; for, when new retorts are required to replace those now in use, the furnaces can be readily reduced in size, without any extra expense to the company.

"In regard to the condenser and scrubber, the report proceeds—'The condenser is injudiciously placed, not being properly protected from the sun; the scrubber is all right.' The position of the condenser certainly is not the best, inasmuch as the rays of the sun falling on it, retard condensation. It is not, however, improbable that an extension of the buildings in that direction may be speedily required; and the new erections can readily be so constructed as to protect the condenser.

"A fourth objection in the report is—'That the tar-pipes from the hydraulic main are dangerously placed.' This has already been remedied, at a cost of less than 50s.

"A fifth remark in the report is—'That the purifiers and valves are well constructed.' This, I believe, is perfectly correct.

"Of the governor, the report remarks—'This is sufficiently large, but in my opinion, it has been fixed injudiciously for the proper distribution of the gas to the consumers: the consequence has been, that double the quantity of main pipes has been used.' This evil can be remedied at a cost of from £25 to £30, and the alteration would set at liberty main pipes to the amount of £100; hence, if we take into account the great advance in the price of iron since the pipes were purchased, the loss will be reduced to a fraction—if there be not a positive gain.

"No. 7 of the report refers to the injury done to the gasholder No. 1, and also to the roofs of several of the buildings, by the storm on Sunday, Oct. 2. This damage, however, was speedily repaired, and at no very great cost.

"In No. 8, the engineer speaks favourably of the large gasholder, but complains that the tank was made six inches too small. This statement might lead the shareholders to suppose that very serious and costly alterations would be necessary either in the tank or the gasholder, or both. But this will not be the case; for, by merely substituting pulley-wheels of a less diameter than those at present in use, which will not cost more than £20 or £30, the tank can be made exactly to contain the gasholder, and the spare wheels can be employed in another part of the machinery.

"Lastly, as to the street mains, the engineer says:—'So far as I can judge, the mains and syphons have been well laid; but, from an oversight, not a valve has been placed in any of the low levels of the town, to regulate the supply to the high levels.' This is, undoubtedly, a great omission, but no money has been expended; and, wherever it is found necessary, valves can be fixed, which could be done in ten or fifteen days, and for a sum not exceeding £50.

"And now, gentlemen, after having carefully gone over the engineer's report, and compared it with the state in which I find the works, I cannot but think that some unnecessary apprehensions were created in the minds of the shareholders at the meeting held on Oct. 5 last. The buildings are excellent in materials and construction, well adapted to the purposes for which they were erected; and I have it as the opinion of an eminently talented gentleman, who is professionally engaged by several gas companies that, better works could not be erected.

"The next subject that presents itself for my inquiry is the statement of the accounts. My having received this statement only a few days since must be my apology for having delayed my own report so long. The books had fallen into great confusion, the secretary's time having been fully occupied by more urgent and pressing matters, arising from the Chancery suits, causes at the assizes, the sessions, and the bench, following each other in such quick succession that the accounts were unavoidably greatly in arrear. You will, however, receive with this report the balance-sheet to the end of December, 1853, certified as being correct by the auditor. The directors have received £30,727, and expended £46,743, leaving a liability of £16,015. This last sum should be provided for by the arrears of calls, the greater half of which may be considered good, and the remainder dubious. Besides the arrears there are the unallotted shares, which are now being taken up at the discount agreed upon at a former meeting. Another source of capital is in the borrowing powers of the company; but I should not deem it prudent to calculate upon those till the pending act of Parliament be obtained.

Dr. GENERAL STATEMENT OF ACCOUNTS. *Cr.*

To deposits	£	209	7	0	By works	£36,923	14 5½
Shares		29,231	17	8	Wages	4,076	17 0
Gas rent and coke		439	14	3½	Law expenses, travelling, &c.	3,359	5 1
Bank		846	12	10	Stationery and printing	353	13 1½
Accounts owing		16,015	13	1	Incidentals	447	19 3
					Rent and taxes	348	7 5½
					Coal and lime	809	15 3
					Interest and commission	186	3 1
					Share account	212	0 6
					Balance in hand	25	11 6
	£	46,743	4	10½		£46,743	4 10½

[Mr. H. J. Smith certifies to the correctness of the accounts, and adds —"I have had great difficulty in the audit from the manner in which the books have been kept, and would strongly urge upon the directors the necessity of an entirely new system of book-keeping."]

"I shall now direct my attention to several complaints made by the shareholders at the above-named general meeting, and especially to the statement that some of the directors had supplied the company with materials and workmanship. This charge I find to be true. But it does not appear that either any materials have been supplied, or any work done, without the knowledge of the other directors, or even without a resolution having been passed by the board for the purpose. In Mr. John Wilson's case, the charges are, 'that, while sitting at the board as a director, he contracted to supply the company with ferrules, and that the ferrules were made of inferior metal.' The directors received five tenders for ferrules, and Mr. Wilson's, being the lowest in price, was accepted. It does not appear that Mr. Wilson sent in any ferrules without an order from either the secretary or engineer; but the metal was of inferior quality. The account between the company and Mr. Wilson being still in dispute, I have ascertained from a practical man the amount of the defalcation, and have recommended both parties to agree to it. The next complaint is, 'that Mr. Seale, while a director, sold bricks to the company'; and a second charge is, 'that he supplied the directors with lead at £25 per ton, while another party had offered it at £23 per ton.' The bricks, it appears, were of an excellent quality, and were urgently wanted at a time when the company could not make them nor obtain them from any reasonable distance. The lead was charged the market price; and, though a small quantity might have been got for something less, I believe the order given by the company could not have been executed under £25 per ton. On the 3rd of June last the following resolution was passed by the board:—Resolved—'That no director shall lay pipes, fix meters, supply goods, or do any kind of work whatever for the company while a member of this board.' I understand this resolution has been strictly adhered to ever since it was passed; and it will be to the honour of the directors if they never suffer it to be broken.

"There are complaints also made against the secretary: first, 'that he has given no security for moneys passing through his hands.' Indeed, there are no securities given by any of the officials. This ought no longer to be permitted. The secretary is secondly accused of 'having introduced to the company Mr. Walker, who charged £800 for the purifiers, when they might have obtained them from another party for half that sum.' Here there must have been a great mistake, for the purifiers, along with the lifting apparatus, and a very large centre valve, together with the gasholder and scrubber, were included in the purchase, amounting to £1350—which sum I find to be much below their real value. This account was in dispute at the time of the last general meeting, but it has since been settled by a deduction of £70 from the above charge, which is, I consider, an equitable arrangement. Further, the secretary has been taxed with 'having, on his own responsibility, purchased metal pipes in London, which had to be sold in Sheffield at considerable loss.' It appears that while in London Mr. Flintoff was informed that these pipes were on sale. He wrote to Sheffield, and was requested by a director to purchase as many as he (Mr. Flintoff) thought necessary. Thirty-six tons were accordingly purchased at four guineas per ton, of which twelve tons were placed between the condenser and gasholder, and the remainder sold at £3 per ton; thereby incurring a loss of £28. 16s., and the cost of carriage. But, though the great advance in the price of iron will ultimately secure the company from loss, yet this transaction involves a principle which requires some comment. In investigating this matter, sufficient evidence was given to convince me that the secretary had not acted on his own responsibility, but that sometimes he was advised by one director, and then by another, as to the course he should adopt. I cannot but condemn this mode of conducting the business of a public company as bad in principle. It ought to be a *sine quâ non* that no important work should be done, or material change made, or journey undertaken, or expense above a certain amount incurred, without a resolution from a board meeting. And here I must be permitted to suggest what has forcibly been impressed on my own mind during this investigation, that the duties of secretary and manager are too onerous to be properly discharged by one person. Each department would require the best exertions of a clever man. Hence, instead of two general officers there ought to be three: the engineer, to have the sole responsibility of the works; the secretary, of the books and accounts; and the manager, of the rest of the business of the company. So that, while these officers should be independent of each other, they ought all to be the willing servants of the directors. My conviction is, that though there have been in some cases useless expenditure, and in others various omissions—things which occur in all large undertakings—these have been errors in judgment and not of principle, except where the contrary has been stated. And as it regards the complaints of the engineer, I believe £150 or £200 would make everything right. And this sum would not be wanted altogether to correct mistakes and supply omissions, but would include new work and new materials. Indeed, most of this has been done already. Of the engineer, though I differ from him in many things, I believe his report expressed his honest opinion of the state of the works; and, as an intelligent and industrious man, I should have no fear of the engineering department being managed safely, efficiently, and economically, while in his hands. Respecting the past and present directors, I am decidedly of opinion that they have done their best for the good of the company, and that great credit is due to them for the manner in which they have conducted its affairs. The shareholders, and the public too, ought not to forget the many, great, and vexatious difficulties with which the directors have had to grapple. At one time the clouds increased in number and density till they darkened the horizon; but now the rainbow appears in the south, and bids fair soon to span the heavens. But, besides the prospect of obtaining the act of Parliament, there are several things in relation to the company of a very encouraging nature, which will go far to compensate for the great expenses incurred and losses sustained. The land on which your works are erected was purchased at the then market price, when there was no probability of a good street and bridge being made for your accommodation. There is now a certainty of both, by which the value of your land will be doubled. Again, the first 2000 tons of metal pipes were purchased at £4. 17s. 6d. per ton. These would now cost £8 per ton. The large gasholder, weighing 165 tons, the iron roofing, and retorts, were all purchased at a similar price. I find, too, that there were a million and a quarter of bricks, made by the company on the premises, at 13s. per 1000, whereas the ordinary price is double that amount, exclusive of carriage. There are also at this moment upwards of eight miles of metal pipes in store (the value of which is from £5000 to £6000), ready to be laid down as soon as legal powers are obtained for opening trenches in the public streets. These are important facts well deserving the consideration of the shareholders. But the great business now to be done is to obtain the act of Parliament, to effect which it will require the cordial and determined effort of both the directors and shareholders. And, as the Legislature in all cases encourages competition, the proprietors are justified in entertaining the highest hopes of success.

"In concluding this report, I feel it but justice to state that I have met with the greatest courtesy and assistance from all parties whom I have had occasion to consult during this investigation; and, now that I have fully informed myself respecting all matters connected with your position as a company, my deliberate opinion is, that you have little to fear, and much to hope. "JOHN CARR."

The CHAIRMAN then moved the following resolution:—"That Alderman Carr's report, and the directors' accounts therein referred to, be adopted, printed, and forwarded to the several shareholders in the company." He said that at an important crisis like the present it was not his intention to trouble the meeting with many observations. He was sure that they all felt that in union was strength, and that their future success depended upon their united efforts. (Hear, hear.) He hoped that any angry feeling which might have existed had been softened down, and that they would now go forward unitedly; if such were the case, he was satisfied they would ultimately be successful. He could assure them that their opponents would not spare any effort that was possible to put them down or to ruin them. (Hear.) In proof of this he might mention that their bailiff had signed a petition to say that it would be injurious to their interests if the new company gained their act; and last Saturday night this company's man could not take care of their bill without being abused and getting a black eye. (A laugh.) They had no proof as to who inflicted the injury, but he did not suppose it was any of their friends who did it. (Laughter.) Mr. Carr had taken a great deal of trouble to investigate the affairs of the company. There were some matters which he (the chairman) felt tempted to go into and explain; but he did not think it would be in place on the present occasion. Unless, therefore, his attention were especially directed to some points on which answers were required, he would content himself with simply moving the resolution. (Applause.)

Mr. S. HORRABIN (a director) said he had great pleasure in seconding the resolution. Mr. Carr had taken great pains with his investigation; and many thanks were due to him for his labours in setting right what some shareholders thought to be wrong. He knew that the intentions of the directors were fair and honourable; and if they had done wrong at all, it was entirely from an error of judgment. (Hear, hear.)

Mr. ISAAC IRONSIDE referred to the terms of the advertisement calling the meeting, which said that it was for the purpose of "receiving Mr. Carr's report. How was it that the chairman's resolution proposed it should be "adopted"?

The CHAIRMAN said it would no doubt be better to make the resolution conform to the terms of the advertisement. It would give the shareholders a better opportunity of considering the report.

Mr. IRONSIDE said that if they merely proposed a resolution in conformity with the advertisement, he would not object to it; but if they called on the meeting to adopt the report at once, he should have some remarks to make.

The CHAIRMAN believed it merely arose from a mistake.

Mr. IRONSIDE said it was quite impossible that any person could carry all the points in his head, and discuss the report, after merely having heard it once read. He thought it would have been better if the shareholders had been furnished with copies before the meeting was held.

The CHAIRMAN said it was Mr. Carr's especial wish not to make the report public till it was presented to the meeting. It was not the wish of the directors. (Loud applause.)

Alderman CARR said he had felt that the report ought to be as independent both of the directors and the shareholders as was possible. He, therefore, felt desirous that his report should not be in the hands of the shareholders till he read it at the meeting. He pursued a course which he regretted, but which he felt it necessary to adopt. (Hear, hear.)

Mr. IRONSIDE asked whether the accounts referred to were up to Dec. 31?

Mr. CARR said he must take the responsibility of that. He asked the chairman that all the accounts might be included to the end of the year, and it was done so.

The CHAIRMAN said he had altered the word in the resolution from "adopted" to "received." The general meeting of the company would be held in about five weeks, and the shareholders would, in the mean time, have a full opportunity of considering the report.

Mr. IRONSIDE said that if Mr. Carr was satisfied with the accounts, he could not object to adopt them, they having also received the approval of Mr. Smith, one of the auditors. When the proper time came he would be ready to discuss the report, but at present he was prepared to receive it and to adopt the accounts.

The CHAIRMAN said the accuracy of the accounts had only been certified by one auditor, because Mr. Padley had stated that he would be unable to bestow any further time upon their investigation. They had called in Mr. Foote to examine the accounts, and so far as he had gone through them he had certified to their accuracy.

Mr. I. SCHOFIELD said he thought the irregularity of the accounts being certified by only one auditor was in a great part counterbalanced by the fact that Alderman Carr had himself, in conjunction with the auditor, to a very considerable extent gone through them. The reading of the report had given him great pleasure, and had afforded him strong grounds of confidence. (Applause.) He expressed his belief that nothing was kept back in connection with the affairs of the company. Whatever irregularity there was, was plainly referred to in the report; and where there was a necessity for a different mode of keeping the accounts it was clearly pointed out. He urged the meeting to unity of purpose. He expressed his belief that the aspect of their affairs was most encouraging, and that when the House of

Commons came to deal with the question they would obtain such a result as would enable the people of Sheffield to carry out in their full extent the important operations of this company. (Applause.)

Mr. NEEDHAM asked whether this would be the time to make some remarks upon the accounts? He wished to say a few words about the solicitors' bills, which were a large item.

The CHAIRMAN said that an opinion had become prevalent throughout Sheffield that the solicitors' bills were much larger than they really were. It was said that the company had expended £7000 or £8000 in law; whereas the sum actually charged by the solicitors was £3500 up to December last, and £200 had been raised towards this sum by subscription.

Mr. NEEDHAM asked how long the bills had been delivered in?

The CHAIRMAN said the bills had been sent in about a fortnight.

Mr. NEEDHAM said he wanted to ask whether the bills could not be taxed? (Laughter.) He believed it was customary to do so with large bills of this kind.

The CHAIRMAN said it would not be pleasant to bring the directors in conflict with the solicitors, and they could not expect to work harmoniously if they were put in personal conflict with them by the adoption of a measure of this kind. He did not want to stifle opinion, but they must see the necessity for unity of action. He should be sorry to see any bitterness of feeling caused. (Applause.)

Mr. NEEDHAM said he did not make his suggestion from any ill feeling towards the solicitors; but he wanted to know whether it would be too late to move the matter at the next meeting?

Mr. HARVEY begged the meeting, if they had confidence in the directors—(hear)—to trust to them to look after the charges of the solicitors. Both Mr. Vickers and Mr. Branson were gentlemen of the highest ability and standing; they had the entire confidence of the directors, and it would be unwise to talk about shifting them at the present stage of the proceedings. He would merely refer to one insinuation which had been thrown out. A gentleman (Mr. Ironsides) had stated that when the proper time came he would be ready to discuss the report. He did not wish to throw the apple of discord; but they must allow him to turn prophet, and to say that that time would never come; for nothing would be found to break up the harmony among them. Do not let them play the game of the Manchester, Sheffield, and Lincolnshire Railway, and fall out amongst themselves, for it would depreciate their stock far more than their opponents could do. (Applause.)

Mr. NEEDHAM (amidst general manifestations of feeling that he should desist) said he was glad to see the spirit evinced by the meeting. If the directors had sufficient power he had full confidence, and would leave the matter to them.

The CHAIRMAN: Do you wish to have any question answered as to the taxation of the bills?

Mr. NEEDHAM: No. He only thought it was usual to have bills taxed. He was glad to see that the meeting was satisfied. He meant nothing personal.

Mr. SCHOFIELD thought it would be time enough to tax the bills when it was found that the charges were unreasonable. Gentlemen who taxed did not work for nothing; and he knew an instance in connection with the bridge proceedings where a bill was sent to be taxed. There was no reduction in the charges, but a large bill had to be paid to the taxer. (Hear, hear.) Besides, the present was a bad time to moot a topic like this. He agreed with Mr. Harvey as to their confidence in the solicitors.

Mr. H. VICKERS—(applause)—said he was glad the subject of the solicitors' bills had been mooted, because it gave him an opportunity of making a statement which lay upon his conscience. After referring to the hurried manner in which the bills had recently been made out, at the request of the directors, he had no fear of taxation; and no payment on account of this bill should at all prejudice them in respect of taxation. (Applause.) He believed there was not an item, either as regarded Mr. Branson's or his own charges, which they could not stand by. £3200 was the amount of the charges sent in, and towards its payment about £450 had been received: £800 had been paid by the solicitors out of pocket for counsel's and other fees. He had a matter of some complaint against the directors for not rendering the solicitors more assistance: £550 more had been paid out of pocket by the solicitors than had been received from the company, and they were now called on for fresh labours in Parliament. He did not shrink from those labours, and he felt confident in the result; but they ought not to be sent to war without the munitions of war. It was unfair that they should fight the company's battles with their own strength. He had asked the directors for the payment of their charges to the extent of what they were out of pocket. This was only reasonable, and beyond that he had not asked. He hoped the directors would consider the matter. He did not like to forsake the company at a time like this, or to throw discord into the proceedings; but he could not sit down without saying what he had done. (Applause.)

Mr. J. ELLIOTT said the working men's committee, who had already handed over £100, had about £5 now in hand, which should also be given for the same object. (Hear, hear.)

The CHAIRMAN said the directors could not recommend the taxing of the bills, because it would be a vexatious course towards the solicitors. He perfectly agreed in any eulogy which had been passed upon the solicitors. He was aware that there solicitor now present was entitled to that eulogy, and that he was generally very cautious in his proceedings; but he thought that that gentleman had stepped beyond his usual caution in the observations he had just made, and had told the meeting something which, if it were duly weighed by the shareholders, would make them consider that the directors had failed to do that which they ought to have performed. (Hear, hear.) Now, this was not a judicious discussion to arouse at this meeting. It was stated that the directors had not furnished the solicitors with sufficient means to prosecute vigorously their proceedings before Parliament. He could only say that the directors had made themselves personally responsible to the extent of £3000; and when they considered the great amount of time and labour which was necessary, besides the responsibility incurred, it ought to induce the shareholders to pay up their arrears if they attached importance to this undertaking. There was no sort of danger as to the ultimate success of the company, but the directors could not pay money if they had not got it. He could give many reasons in reference to this matter, to show that no fault rested with the directors, but it would be an unfit subject for a meeting of this sort. He could not compliment his friend Mr. Vickers on the sagacity or caution he had displayed in bringing this matter forward on the present occasion. The directors could give good reasons for their conduct. He hoped they would be enabled to discuss this matter, if it were necessary, at another meeting; but at present he would take all the blame on himself rather than go into the subject, because it would be to the disadvantage of the company to discuss it. The chairman concluded by urging the shareholders to unity of action in carrying out the objects of their undertaking. (Applause.)

The motion was then put, and unanimously carried.

Mr. G. BEARDSHAW (a director) moved that the special thanks of the meeting be given to Alderman Carr for the very great attention he had paid to the investigation of the company's accounts. The result would be very beneficial to the company.

Mr. HARVEY (another director) seconded the motion, and acknowledged the many important services to the town which Alderman Carr had rendered.

Mr. I. SCHOFIELD spoke in the same strain.

Mr. IRONSIDE said that a very ignorant and impertinent remark had been made by a speaker on the bench (Mr. Harvey) on his observation that at the proper time he should discuss the topics raised and the conclusions arrived at in Alderman Carr's report. He trusted that Alderman Carr did not consider that he (Mr. Ironside) found fault with his report. (Alderman Carr: "Not the slightest.") He expressed sympathy with Mr. Vickers on account of the position in which he was placed, and hoped he would not forsake the company.

Mr. NEEDHAM said he would now disclose the secret of his questions respecting the law bills. The chairman had remarked that he had heard by a sidewind that there was going to be some allusion at this meeting to that item in the accounts. It was quite true. George Flintoff was the man who came to him (Mr. Needham) that morning, and desired him to do what he had done at this meeting. (Sensation.) He did intend to bury that fact, but after the second allusion of Mr. Ironside, he considered it necessary to explain in full. Mr. Flintoff came to him and desired him to do it. Mr. Flintoff said the directors did not know he was coming to make that request.

Mr. CROWTHER really thought that Mr. Needham should not have come out with such a remark at the present time.

The CHAIRMAN said he was so astonished at the remark that he scarcely knew at the moment what to say to it. But whether true or false it was exceedingly ill-timed. If Mr. Needham had thought the suggestion wrong, he should not have acted upon it; if he thought it right, he should stand on his own merits and take the responsibility himself. If the statement were true, it showed great incaution on the part of the secretary (Mr. Flintoff).

The vote of thanks having been carried by acclamation, Alderman Carr expressed his thanks, and said he was very glad if his report in some degree restored confidence between the shareholders and the directors. That had been his great object consistently with conscientiousness. He had not the slightest doubt about obtaining their act. The directors had worked hard for the company, and the shareholders ought to work hard in a pecuniary point of view. All depended upon that.

Mr. BLAND (Haymarket) said he wished to remove a little blame from Mr. Flintoff. Mr. Needham called at his (Mr. Bland's) office about a fortnight ago to point out the item of the law charges as it appeared in the GAS JOURNAL, and he remarked, at the same time, that something ought to be said about it. He had no doubt that Mr. Needham said something to Mr. Flintoff to get an expression of opinion from him.

Mr. M. BEAL moved a resolution expressing the entire confidence of the shareholders in the honour and integrity of their solicitors. The battle which the company had to fight depended much upon the heartiness of the solicitors, who were the men that would have to fight it. He urged the advantage of unanimity throughout the company, possessing which they had nothing to fear. The saving to the company from the fact of the metal having been purchased when it was cheap was more than equivalent to the whole amount of the solicitors' bills.

Mr. SCHOFIELD had great pleasure in seconding the motion. The law expenses were much below his anticipations.

The vote of confidence was carried by acclamation.

Mr. VICKERS said he accepted the resolution with great gratitude. No pains had been spared by his colleague or himself, and their exertions had been great. They had had to cope with two successive Chancery suits, on which four or five hearings and judgments had been given, all of them in their favour. They had as many as 150 affidavits to file, and there were 135 on the other side. All those had to be examined and laid before counsel. No wonder, then, that counsel's fees amounted to the frightful sum that they did. In addition to the Chancery suits there had been, he believed, seven actions of ejectment to resist, four only of which came to trial. In two others they non-suited the plaintiffs; and the other two, he believed, were tied up indefinitely, and would never appear again. (Hear, hear.) They had had to defend actions for penalties before the magistrates. Those had ended in compromises, and neither penalties nor costs had been paid; so that they had not, in any instance, paid their opponents one iota of costs; but they had received costs from their opponents. That afforded some justification of the heavy amount of the law bill to which allusion had been made. He was no stranger to parliamentary engagements of this sort. He had fought parliamentary battles equal to this under very similar circum-

stances, and he had no personal fear of the result in this instance. (Hear, hear.) But they could not fight without weapons; and in such a case as this the weapons were money. (Applause.)

The meeting, which occupied something less than two hours, ended with a vote of thanks to the chairman and directors.

SHEFFIELD CONSUMERS' GAS COMPANY.—A meeting was held in the Townhall, on the 27th ult., to consider the presentation of a petition to Parliament in favour of the new gas company's bill. The speeches principally consisted of a recapitulation of those grievances which have been so frequently stated to have been caused by the old gas company, and a reiteration of the statement that the operations of a new company are necessary to check the evils complained of. A spice of piquancy was, however, introduced into the level dulness of the allegations by some remarks of a personal nature which brought up a gentleman connected with the old company in reply. An animated discussion thereupon took place, which would no doubt have wandered far beyond its legitimate limits if it had not been very properly checked by the mayor, who displayed his well-known impartiality and discretion in conducting the proceedings throughout. The following is the substance of the resolutions agreed to:—That the formation of the Gas Consumers' Company was rendered necessary by the excessive prices charged, and by the arbitrary, exacting, and unaccommodating spirit of the old company; that the partial operations of the new company have been of great benefit to the inhabitants of the borough, and when completed they will be still more beneficial; that it is desirable to obtain an act of Parliament enabling the new company fully to develop its operations, and that a petition in favour of such act be adopted by the meeting. A petition was accordingly adopted, in which was briefly recapitulated the past and existing condition of the Gas Consumers' Company, followed by a statement of the petitioners' belief that the only way of obtaining a cheap and good supply of gas, and remedying the evils previously complained of, would be by the granting of such an act as would enable the new company to carry out their operations to the fullest possible extent. The meeting generally appeared to sympathise with the advocates of the new company.—*Sheffield Times*.

LIGHT IN ROME.—Gas-lighting and railways are two of the great features of modern civilisation. What may we not, therefore, expect when Rome, so long plunged in a state of intellectual torpor, at length awakes to adorn her streets with gas-lamps; and the railroad to Nascali is again the theme of conversation. The English traveller walks along the Corso, as brilliantly illuminated as the paved ways of our northern metropolis. Gas in Rome is another instance added to the already numerous examples of an improvement obstructed and waged war upon in its first beginnings; but finally, overcoming prejudice, and hailed with applause on all sides. The Romans, after opposing the progress of light in their city with that obstinate pertinacity characteristic of ignorance, are now vying with each other to patronise and further it. On Tuesday, Feb. 14, a *fête* took place at the Doria Palace, which may be considered as a crowning triumph for Mr. Shepherd, the able engineer having the direction of the gas works here. The immediate object was to raise a sum of money for the relief of the poor in the present distressed state of the lower classes in Rome. The riding-school of the Doria Palace was for this purpose converted into a ball-room, and fitted up as a winter garden. Plants of all descriptions were brought from Civita Vecchia, and even from Genoa, to aid in the decoration; whilst from amidst this mass of flowering shrubs and foliage not less than 2000 gaslights burst forth, encircling baskets, bouquets, and chandeliers. Statues of Tritons reclining upon fountains, held in their hands olive-branches, the leaves of which were formed of jets of gas. The ball-room was thronged by a crowd of all that was most distinguished in Rome. Princes and nobles of every nation, ladies glittering in jewels and the gayest attire, formed a picture of living flowers, and presented a magical appearance in the midst of a summer-like verdure. The following day the Pope visited in person the establishment of Mr. Shepherd, examining everything with great interest and attention, and paying to that gentleman the compliments he so justly deserved for the truly English energy and perseverance with which he has now for years battled with difficulties and discouragements of every description. Shortly after his visit to the works, the Pope sent by the hand of one of his grand chamberlains, Monsignore de Merole, the gold medal of the first class to Mr. Shepherd, and the silver medal to Mr. Shepherd, jun., who had conducted his Holiness over the works, and explained the operations. The medals were sent with every kind of compliment that could be expressed. On Feb. 16 the ball-room was again opened to the public at a reduced price, for three hours in the evening, and was again filled with admiring crowds. We heartily wish success to this (for Rome) really great and important undertaking, which may justly be regarded as the first step towards placing the Eternal City again in the rank of moving nations.—*Builder*.

INJURY FROM GAS EXPLOSION.—In the Court of Exchequer, at Guildhall, on January 25, was tried the case of Creed *v.* Rigby. It was an action by which the plaintiff and his wife sought to recover compensation in damages for injury sustained by the lady, through the alleged negligence of the servants of the defendants. It appeared that the plaintiff and his wife keep a lodging-house in America-square, Minories, and that the defendants are the well-known contractors of Holywell-street, Millbank, who have for some months been engaged in building the large extension of the London and Blackwall Railway terminus in Fenchurch-street. In the progress of this work, it seemed, they were obliged to cut off one corner of the plaintiff's house; and it was while making this dilapidation good that the painful accident took place. The workmen, in the course of their operations, having removed some of the gas apparatus, neglected to prevent any escape of that illuminating fluid. An escape, therefore, to a considerable extent followed, and Mrs. Creed, finding that every room in the house was becoming impregnated with the effluvium, went about from one room to the other to discover, if possible, where the escape proceeded from. At last she entered that in which the defendant's men had been at work, when she found that the offensive object came from some escape in that room. She at once put up the window, and hastened to obtain a light, in order to enable her to ascertain the precise spot whence the gas was escaping. On her return with the light she raised it so high as to cause an explosion of the gas which had gathered in the upper part of the room, by which she was so seriously injured as to be laid up for six weeks. Upon an examination being made as to the extent of the injuries the lady had received by her medical attendant, that gentleman discovered that her face was very badly burnt; that her eyebrows and eyelashes were quite burnt off; and that her right hand was very seriously injured. The lady was confined and suffered the most excruciating pain for at least six weeks, at the expiration of which period it was found that the hand had become permanently contracted.—The defence was, that the defendants had let this portion of the work to a sub-contractor, and that they were not liable for the negligence of another contractor's men. The learned counsel (Mr. Hawkins) having urged this point with considerable force, Mr. Barron Platt said that he would reserve the point, and, if the jury should eventually find for the plaintiff, he would give the defendants leave to move to enter a nonsuit.—The jury ultimately gave a verdict for the plaintiff—Damages, £250.—Mr. Baron Platt then gave Mr. Hawkins leave to move to enter a nonsuit.

Price Current.

CASTINGS, per Ton.

Average Weight of Cast Iron Gas Pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	136	149	177	208 lbs.

Retail Prices are 5 to 10 per cent. higher.	London.			Glasgow			Newcastle.			Wales.			Yorksh., Derbysh. and Staffrdsh.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Pig Iron, No. 1	5	5	0	4	2	6	4	10	0	4	15	0	5	0	0
1¼ and 2 inches Socket Pipes	9	2	6	8	5	0	8	5	0	8	10	0	8	10	0
2½ and 3 do. do.	8	17	6	8	0	0	8	0	0	8	5	0	8	5	0
4 and 5 do. do.	8	12	6	7	15	0	7	15	0	8	0	0	8	0	0
6 inches and upwards do.	8	7	6	7	10	0	7	10	0	7	15	0	7	15	0
Extra for bends, branches, and connection	2	10	0	2	10	0	2	10	0	2	10	0	2	10	0
Retorts, 2nd fusion, hot blast	8	5	0	7	7	6	7	7	6	7	12	6	7	12	6
Do. 2nd fusion, cold blast	8	15	0	..			7	17	6	8	2	6	8	2	6
Tank Plates, ¼ thick and above	8	10	0	7	12	6	7	12	6	7	17	6	7	17	6
Do. less than ¼	9	0	0	8	0	0	8	0	0	8	5	0	8	5	0
Plain Castings ex. models	8	15	0	7	17	6	7	17	6	8	2	6	8	2	6

COALS.

NEWCASTLE.				DERBYSHIRE.			
Unscreened.	s.	d.		Clay Cross, Deep Main, and New Birchwood	8s.6d. per ton.		
Whitwell Primrose	7	6	per ton.	SCOTCH CANNEL.			
Dean's Primrose			,,	Boghead at Leith	25	0	,,
Pelton	8	0	,,	Kirkness best	23	0	,,
Brancepeth				Capeldrae, first quality	20	0	,,
Medomsley				Ditto, second quality	12	6	,,
Pelaw	8	3	,,	Lothian	20	0	,,
Burnhope				Lesmahago at Glasgow	23	0	,,
Eighton Moor				Ditto at Grangemouth	25	0	,,
Felling Main				Arniston	22	0	,,
New Pelton				Wemyss (at the pits)	16	0	,,
Peareth	8	6	,,	Bridgeness	17	0	,,
South Pelaw				Kinneil			
Waldridge				Knightswood	18	0	,,
Washington Hutton				Lochgelly	12	6	,,
South Peareth				Lumphinan			
Ramsay's Cannel	16	0	,,	Methill	11	0	,,
Cowen's Cannel	16	0	,,				

FIRE GOODS.

Best Bricks, 50s. per 1000, at Newcastle.
Do. Clay, 12s. per ton do.

LEAD.

Soft pig, £25 to £26 per ton.

WROUGHT IRON TUBING, subject to 25 per cent. Discount.

	2 inches.		1½ inch.		1¼ inch.		1 inch.		¾ inch.		½ inch.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Patent welded tubes, from 2 to 12 feet, per foot	1	8	1	0	0	10	0	7	0	5	0	4½
Ditto ,, 6 in. to 18 in., each	3	0	2	0	1	9	1	3	1	0	0	9
Connecting pieces, or long screws	3	6	2	3	2	0	1	6	1	2	0	11
Bends, springs, and elbows, wrought iron	3	9	2	3	1	9	1	0	0	10	0	8
Tees, wrought or cast	4	0	2	6	2	0	1	6	1	1	0	10
Crosses, wrought or cast	4	6	3	0	2	6	2	0	1	6	1	2
Iron cocks	17	6	9	6	7		4	6	3	3	2	6
Ditto, with brass plug	28	0	16	0	13	0	7	0	5	6	4	6
Diminishing sockets, caps, plugs, and nipples	1	3	0	9	0	8	0	6	0	5	0	4
Plain sockets	1	0	0	8	0	7	0	5	0	4	0	3
Flanches	1	9	1	6	1	3	1	0	0	9		
Syphons, 2 quart	15	0	14	0	13	6	13	0	12	0		
Ditto 1 quart	11	6	10	6	10	3	10	0	9	6		

FREIGHTS, per Ton.

Coastwise—Newcastle.		*Foreign.*	
Chatham & Roches.	9s. 6d	Weymouth	12s. 6d
Cork	17 0	Boulogne	11 6
Dover	13 0	Barcelona	40 0
Dublin	17 0	Bordeaux	23 0
Exeter Quay	11 0	Calais	11 6
Folkestone	10 0	Constantinople	48 0
Hastings	15 0	Dieppe	12 6
Ipswich	9 0	Genoa	38 0
Jersey	11 6	Hamburg	13 6
London	9 0	Havanna	18 0
Lowestoft & Yarmth	8 0	Havre	14 0
Lynn	9 6	Leghorn	30 0
Margate	12 0	Lisbon	15 0
Portsmouth	13 0	Rotterdam	13 6
Plymouth	13 0	Rouen	16 0
Southampton	12 6	Stettin	15 0
Whitstable	10 0	Trieste and Venice	38 0